CASE STUDIES IN INDUSTRIAL ADMINISTRATION

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11.	Shri K. Venkataraman, IIPA, New Delhi. ..	Member-Secy.

Project Director

Dr. Ram K. Vepa

Editor

Shri K. Venkataraman

Our Contributors

1. Prof. V. V. Ramanadham, Director, Institute of Public Enterprise, Osmania University, Hyderabad.
2. Prof. Laxmi Narain, Head, Department of Business Management, Osmania University, Hyderabad.
3. Dr. S. P. Vijayasaradhi, Institute of Public Enterprise, Osmania University, Hyderabad.
4. Prof. K. T. Ramakrishna, Institute of Public Enterprise, Osmania University, Hyderabad.
5. Prof. A. S. Jagannadha Rao, Institute of Public Enterprise, Osmania University, Hyderabad.
6. The *Late* Devindar Nath, the then Secretary, Department of Industries, Government of Madhya Pradesh, Bhopal.
7. Shri A. D. Moddie, Resident Director, Hindustan Lever Ltd., 1, Express Building, Bahadur Shah Zafar Marg, New Delhi-1.

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PREFACE

All the case studies in the fourth volume of the IIPA's case study series are connected with the problems of industry—they bring out either important aspects of working in industry or factors that are important in decision-making. Dr. Ram K. Vepa in his introduction has given details of the seven cases published in this volume.

One important purpose of mid-career education, I believe, is to develop ability in the participant to conceptualise his experience. Whatever the method of education, the participant should be able to examine his experience; and after analysis, he must re-arrange it to get new insights about himself, his environment and his work. Our perspectives of reality must continuously shift if relevancy and optimum decision-making in work situations are to be maintained. To recognise that there are more ways than one of looking at the same event, and more solutions than one to problems, is likely to develop the participant's ability to seek alternatives and to examine them in his search for the most appropriate action. The exercise would also make him sensitive to the consequences the decision would have on the total system and to the problems of change that would confront him as the decision-maker.

Instructors are increasingly concerned with teaching methods. They have to evolve methods that would best help the participant to interpret and analyse their experience through interaction with other persons and induce a study of relevant research findings in the participant's field.

With the aim of enlarging the participant's cognitive map and providing insights about himself and others, many teaching methods have been tried in institutions that are concerned with the training of adults in mid-career. Case studies are one device for the understanding of events in work situations. They help the participant to learn how to make more effective use of available data in looking for possible alternatives and to base

his decision on a suitable frame of knowledge. In this context, teaching by cases has gained respectability in many professional institutions and universities during the last several years. The first initiation to case method at Harvard University came in 1937. In the teaching of management, Harvard felt that the methods employed in the schools of law and medicine could be usefully tried. The writing up of real life situations helped professionals to become more precisely concerned about the realities of work situations.

Case teaching is a process of learning from the specific to the general. In several other educational settings the emphasis is on direct teaching of general concepts and theories. In case teaching, the process is reversed. Through analysis of a number of situations, the participant begins to develop from these situations a generalisation and concepts. The case teacher's skill lies in his arrangement of the cases and in motivating the participant to examine relevant issues in the cases. The advantage derived from the case method is a very personal kind of learning. Instead of seeking reality through abstract theory, the participant recognises a concrete phenomenon in real life and through various processes of enquiry leads up to the generalisation that will help problem solving more effectively.

In this Institute, the conviction that the participant should learn through experience and through a method of education that is experience-based, is not new. The case programme began in 1961 and still continues. In recent months the Institute undertook a programme of developing cases for teaching purposes. We hope to publish these cases in due course.

We are indebted to the Institute of Public Enterprise, Hyderabad, for collaborating with us in the development of four of these cases in the present series. We firmly believe that this kind of collaboration between institutions for developing teaching material is essential and we have continued to follow this policy of collaboration, wherever possible.

We are indebted to the case writers for finding time from their busy schedules to work on the case material and to

Dr. Ram K. Vepa, Honorary Director of Case Studies, and Mr. K. Venkataraman, who have devoted many hours in editing the material and preparing it for publication. The Institute is indebted to them for their hard work and help. Our Publication Division headed by Mr. Om Anand with the support of our Registrar, Mr. R. G. Mulgund have given their time generously to publication details. To all of them, we give our grateful thanks.

ISHWAR DAYAL
Director
INDIAN INSTITUTE OF PUBLIC ADMINISTRATION

NEW DELHI
AUGUST 13, 1973

INTRODUCTION

This is the Fourth volume of Case Studies which is being brought out by the Case Studies Committee of the Indian Institute of Public Administration. The previous three volumes have dealt with several facets of Administration and in particular with problems relating to Panchayati Raj, Law and Order and Industrial Development.

While the contents of these volumes have ranged over a wide variety of subjects, it was considered desirable that, in future, we might try to concentrate on specific areas so that students who are particularly interested in the area, may profit from case studies on actual situations that have developed in that particular area. This volume is, therefore, devoted largely to problems concerning Industry, both large and small, public and private. This is an area which is attracting increasing attention from students of Public Administration. The old dichotomy between Public Administration and Management is now seen to be largely illusory and problems of administration are basically similar, whether they relate to the management of a District or of a Government Department or an industrial enterprise.

Having said this, however, it must be admitted that each of these areas of Public Administration does have a special emphasis of its own and it is, therefore, of interest to see how these problems have been tackled in actual live situations. The contents of this volume are devoted to problems connected with Industry and raise a number of interesting points in relation to the establishment and operation of industrial units.

The first two case studies by Prof. Ramanadham of the Institute of Public Enterprise, Hyderabad, deal with a major public sector undertaking which has been set up in Tamil Nadu, *viz.*, the Hindustan Photo Films. The first study relates to the *Problem of Capitalisation* of this project. One of the common features of most industrial projects, particularly in the public

sector, is the long gestation period due to various reasons which raises the question of capitalising the pre-operational expenses. In the case of *Hindustan Photo Films*, the construction of buildings took much longer than was expected and the agreement with the foreign collaborator had to be revised several times. It took the Company nearly six years to go into production after its formation, although the original expectation was that this would not take more than three years. This raised problems of how to capitalise the expenditure which was incurred in this period. The Case Study also reveals that the mode of capitalisation has a far-reaching effect on the tax structure of the Company, the liquid funds available to the Company as well as the credits that it can draw from the financing institutions.

The second Case Study is also on the Hindustan Photo Films by the same author entitled : *Product-mix of H. P. F.;* it deals largely with the negotiations which the Company had to conduct which its foreign collaborators regarding the items to be manufactured by the Company. Since the Company could not commence production according to the original scheme, the agreement which was entered into between the Government and M/s Bauchet had to be modified, particularly since the foreign collaborators were themselves absorbed by a leading European photographic firm. This raised the question of switching over to more sophisticated products for which technology became available at the same time ensuring that the initial costs would not be exceeded and that the final product would have a demand within the country. As in the case of all public sector enterprises, the problem is further complicated by the fact that approvals of the administrative Ministry need to be taken at various points, before an agreed solution could be arrived at.

The third Case Study deals with a problem of perennial interest, *viz.*, the location of a public-sector project. The present case study deals specifically with the *Location of the Synthetic Drugs Project* by Prof. Laxmi Narain of the Osmania University, Hyderabad. The study describes the circumstances which led to the location of this particular project at Hyderabad. The criteria for selection of a suitable location for such a project were laid down by the Soviet experts and an Indian

Committee appointed for the purpose conducted a techno-economic survey of various possible locations. Different State Governments began pressing their claims for the location of the project in their states. The final choice was a compromise between the purely objective and the extra-technical considerations that always play a part in such a decision. The Government of Andhra Pradesh showed keenness and anxiety to have the factory located in Andhra Pradesh and agreed to meet the cost of effluent disposal which finally turned out to be a substantial figure of Rs. 60 lakhs. It is interesting to note that the Committee on Public Undertakings in their report had declared that the choice of the location was "not happy" and the study brings out the inter-play of various forces which resulted in the final decision of the Government.

Small Scale Industry is now being recognised as an important segment of the national economy and hence the study by Prof. K. T. Ramakrishna and Shri S. P. Vijayasaradhi on *Bank Finance to Small Scale Industry* is a timely one. The case study deals with the manner in which bank credit was made available to two units in the small-scale sector, the element of financial planning in the units, the extent of technical investigation and the mode of appraisals done by the Bank before granting the credit. In view of the considerable criticism that the Banks still continue to follow a somewhat conservative policy in this regard, the case study brings out the problems relating to extension of credit to small-scale units, both from the viewpoint of the Bank as well as from the viewpoint of the entrepreneurs themselves.

The case study relating to *Transfer and Expansion of the Foundry and Forge Division of Victory Machines Ltd.* by Shri A. S. Jagannadha Rao details the circumstances leading to the shifting of this Division from its original location which was considered unsuitable to another place. Various circumstances which were originally not foreseen suddenly developed to precipitate a decision regarding the transfer. The timely assistance rendered by the Government of India to the Company enabled it to shift the Division to a more suitable place and also to modernise it. The move, however, provoked the opposition of

the labour unions and difficulties in this regard had to be solved.

The case study relating to the *Price of Power for the Korba Aluminium Plant* is somewhat similar to the one relating to the Synthetic Drugs Project. (The author of the case study, the *Late* Shri Devinder Nath, was Secretary to the Government of Industries, Madhya Pradesh at the time dealt with in the case study. His untimely death is indeed a great loss to Public Administration and an earlier case of his '*On Logs and Men*'[1] was widely appreciated as instructive and original.) The present case reveals the extent to which the Madhya Pradesh Government was prepared to accommodate the project in fixing the price of the power to be supplied to the factory. The negotiations between the Central Government and the Bharat Aluminium Company on the one hand and the Government of Madhya Pradesh on the other, led to the acceptance of an almost "sacrificial rate" by the Madhya Pradesh Government. One wonders whether it is really appropriate for public sector projects to demand their 'pound of flesh' in this regard from the State Governments and whether the latter are indeed prudent in demonstrating an over-anxiety to obtain these projects. In spite of instructions to the contrary, one finds that the practice of 'bidding' for the most favourable terms from State Governments for location of new projects unfortunately persists.

The last case study relates to the *Indian Vegetable Oils Ltd.* by Shri A. D. Moddie, an Executive Director of the Hindustan Lever Company. The study deals with a peculiar situation which arose in 1964 as a result of the Government orders prohibiting the export of groundnut oils and Vanaspati from Gujarat which is a surplus state as far as these commodities are concerned. The move arose out of the indiscriminate and large-scale exports which caused a rise in price of Vanaspati. There was a corresponding increase in the price of other foodgrains and there was, therefore, an agitation for imposing some ban on the export of these commodities from Gujarat. The impact of this measure on the commitments already made by the Company

[1]New Challenges in Administration, IIPA, 1972, pp 15-41.

is analysed in the case study and in spite of the ban it is said there was no perceptible downward trend in the prices. According to the author, Government had 'to learn the hard way' a lesson that the situation could not be remedied merely by imposing bans. (The other side of the case has been presented in another case study which could not unfortunately be published due to administrative reasons).

Four of these Case Studies, *The Product-Mix of HPF* by Prof. V. V. Ramanadham, *The Location of the Synthetic Drugs Project at Hyderabad* by Prof. Laxmi Narain, *Bank Finance to Small Scale Industry* by Prof. K. T. Ramakrishna and S. P. Vijayasaradhi and *Transfer and Expansion of the Foundry and Forge Division of Victory Machines Ltd.* by A. S. Jagannadha Rao were written as a result of a collaborative arrangement between the Institute of Public Enterprise Hyderabad and IIPA. We are thankful to the Institute of Public Enterprise and to Prof. V. V. Ramanadham who headed the team of writers, for preparing these useful Case Studies for the Indian Institute of Public Administration.

The collection of several case studies included in this volume deals with several facets of Industries, both in the public and in the private sectors, in their establishment as well as operations. It is hoped that these Case Studies of actual situations will be of interest not merely to training institutions but to all those, who are concerned with the growth and development of the Industry in the country.

NEW DELHI
AUGUST 13, 1973

DR. RAM K. VEPA
Hony. Director
CASE STUDY PROJECT
INDIAN INSTITUTE OF PUBLIC ADMINISTRATION

THE PROBLEM OF CAPITALISATION IN HPF

PROF. V. V. RAMANADHAM

Hindustan Photo Films Manufacturing Company Limited (HPF) was set up on November 30, 1960 with the purpose of manufacturing cinema films, photographic films and papers, X-ray films and other sensitised materials. The Government of India entered into an agreement with the French firm, *Societe Anonyme Des Establissments Bauchet & Cie*, who as collaborators, were to supply the machinery necessary for the production as well as the required technical services. They agreed, further, to train Indian engineers at their factory in France.

HPF was licensed for an annual output of 8.4 million sq. metres of sensitised materials. This would provide for the increase in coating capacity to 12.0 million sq. metres per annum.

The time-table contemplated for the construction of the factory, the installation of machinery, testing of plant and machinery, and the commencement of production is given in Table 1.

TABLE 1

Months after the coming into force of the agreement	Item of Work
1. 15 months ..	Beginning of the shipments of machinery and equipment
2. 18 months ..	Start of installation
3. 25 months ..	Putting of machinery into operation
4. 26 months ..	Effective start of production
5. 31 months ..	Final shipment of machinery and equipment
6. 37 months ..	Complete installation and testing of all machinery and plant.
7. 37 months ..	Acceptance tests.

HPF engaged a firm of architects for the preparation of the detailed designs of the buildings. The agreement placed the responsibility for supervision of building construction on the company itself. As a first step, HPF entered into contracts for the pile foundations as well as for the general builders' work for the two blocks of production buildings. By the end of 1961-62, HPF was at the stage of examining the plans for the administration, laboratory and social service buildings.

Though the levelling of site began in October 1961, work on the first production building was undertaken only in April 1962. As per the terms of the agreement, the installation of machinery was to have been taken up by that time.

With regard to the second production building, the work turned out to be still slower. The reason was that it proved difficult to drive piles to rock level, an operation deemed essential in the situation of the factory. That alone would avoid differential settlement between the buildings. The difficulty was so formidable that the building had to be redesigned. The decision to redesign the building was taken early in 1963 and the construction work started in April, 1963. According to the new design, the building was to be four-storeyed, standing on raft foundations; and piles work was eliminated. The agreement envisaged that machinery should be not only totally erected but put into operation by the middle of November, 1962.

The difficulties and delays in the construction work were not limited to the complications in the field of design. The contractor who was awarded the civil works proved difficult. It was not easy to transport building material and equipment from the plains to Ooty over narrow hill roads. The effective working season was limited by conditions of monsoon weather over a major part of the year; and there were difficulties in obtaining local labour suited to the execution of the complicated construction work of HPF.

In consequence, the first production building was ready at the beginning of 1965, while the second building got ready about seven months later. About this time, the administration, laboratory and social centre buildings were completed.

Work on the installation of machinery was also delayed. It was in April, 1962, that the first shipment of machinery arrived

from abroad. Actual work on the erection of machinery started in July, 1963. An important factor which slowed down the work on the installation of machinery was the delay that occurred in the civil works, which was mainly the result of the necessity to redesign the second production building. Incidentally, changes in the design of the building called for changes in the design of some production equipment. While the transport of heavy machines such as the 27-tonne boilers over hill roads presented inconvenience and difficulty, the delicate work, involved in theinstallation of even smaller pieces of equipment in narrow and enclosed spaces inside the buildings, raised certain problems. Most of the equipment was installed by the end of 1966, though the machines were being tested, wherever possible, right through the year.

In terms of the agreement, start-up programmes were conducted in the different departments of HPF as follows :

Conversion Department	:	June 8, 1966.
Film base department	:	January 1, 1967
Emulsion preparation and coating department	:	February 14, 1967.

HPF had also to encounter certain technical problems from time to time. Defects appeared early in 1965 in the drums of the base casting machines. These were eliminated by the metallisation and polishing of the drums by foreign experts and it was hoped that the problem would end there. However, the defects reappeared again early in 1966 and called for remedial action. Though the collaborators admitted full responsibility for them and undertook the necessary measures, HPF's production programme was affected and the schedule of output was somewhat upset.

Thus the date of completion of the project had to be revised several times. Originally it was fixed as November, 1963. This was revised to December, 1964. Another revision took place in favour of October, 1965. Finally, the date was fixed as the latter part of 1966, when HPF succeeded in going into partial production.

Developments in the direction of revising and finalizing the product mix of HPF took a long time and involved not only protracted but delicate negotiations with *Bauchet*.

Bauchet, the original collaborators were taken over by *Minnesota Mining and Machinery Corporation*, better known as the 3M Co., which later took over a leading photographic firm in Europe, *Ferrania*. The study undertaken by the technicians from the collaborators indicated the need for altering the design of the major equipment in order that the responsibilities of the collaborators could be fulfilled satisfactorily. Besides, changes in the product mix called for revisions in the quality standards of certain products and the definitising of acceptance tests, which were a responsibility of the collaborators.

As a result of all these considerations, the collaborators could establish commercial production of cine-film positive (black & white), the first item in the agreement, only in June, 1967, though they ought to have done so by the end of 1962.

Though production commenced some six years after construction had started, HPF adopted the policy of engaging in commercial operations, capable of resulting in some profit, in its very second year of existence. In 1962-63, HPF began to import films from the collaborators and sell them in a repacked condition with its own trade name, *Indu* imprinted on the products. The trial imports—as these were known—tended to contract substantially from 1965-66 onwards, because of the limited quota of foreign exchange that HPF was granted. The products were, no doubt, in great demand; but the operations under this head shrank; and the situation of profits in the earlier years was reversed into one of losses.

The slow beginnings of production activity in HPF may be gathered from the fact that against the fully commissioned capacity of Rs. 1450 lakhs, the value of production in 1968-69 was only Rs. 195.28 lakhs.

During the first year of its existence, HPF did not open the profit and loss account, since there were no operations of a revenue character. While specific items of expenditure that could be easily identified with the acquisition of assets were debited to the fixed asset account concerned, several other items were booked under an account called, *Expenditure during Construction*. The largest single item under this head was, Interest relating to machinery purchase. Other big items were training expenses of Indian technicians in France, salaries and allowances, law charges, and architects' fees. In 1961-62,

the total of the *Expenditure during Construction account* was Rs. 16.62 lakhs, as against the figure of fixed assets of Rs. 18.39 lakhs. The practice of booking several items of expenditure under the *Expenditure during Construction account* continued ever since; and the question of allocating the amounts to various items of fixed assets was not taken up till 1965-66. The extent of debits to the *Expenditure during Construction account* was quite large from year to year, constituting more than a third of the expenditure under the head of capital assets in certain years, e.g., during 1964-67. In fact during 1966-67, the figure was a little less than half of the "net block" figure. The figures of net block and of *Expenditure during Construction,* for 1961-67 are shown in Table 2.

The profit and loss account was opened during 1962-63 when HPF commenced trial-import operations. But the revenue expenditure debited to these operations was relatively small, as compared with the debits to the *Expenditure during Construction account.* From columns 5 and 6 of Table 2, it may be seen that it was only in 1966-67 that revenue expenditure became sizeable for the first time, for production operations commenced on a large scale during that year.

The progressive importance of the cumulative balances in the *Expenditure during Construction account* may be gathered from the following data. By the year 1966-67, the unallocated expenditure under that account was about 28 per cent of the cumulative net block.

The expenditures incurred since the inception of HPF on apparently revenue items were booked under the head of *Expenditure during Construction* and amounted to Rs. 129.74 lakhs by the end of 1964-65. The allocation of the expenditure under this head was expected to be taken up at the end of that year when the construction would be completed in a large measure. Early in 1965, the question was raised by the finance department of HPF as to how the amounts under this head should appear in the balance sheet on March 31, 1965. The recommendation of the finance department was in favour of continuing to show the amount under the same head in that balance sheet as well, because production was not expected to commence before March 31, 1965. Further, though the

TABLE 2

NET BLOCK AND EXPENDITURE DURING CONSTRUCTION

(Rs. in lakhs)

1	2	3	4	5	6
Year	Net block	Expenditure during construction	(3) as % of (2)	Revenue expenditure	(5) as % of (3)
1961–62	18.39	16.62	90.36	—	—
1962-63	231.47	27.37	11.82	0.86	3.14
1963–64	193.02	36.83	19.08	1.42	3.85
1964–65	138.03	48.92	35.45	2.36	4.82
1965–66	247.28	83.42	33.74	3.30	3.95
1966–67*	138.97	62.28	44.83	7.268**	11.67

*Upto November 30, 1966

**Inclusive, for the first time, of depreciation on all assets.

equipment might be installed, it was unlikely to be commissioned before that date. While these supplied the basic rationale of the recommendation, the finance department pointed out a practical difficulty in determining the extent of allocation of the amount to fixed assets. The allocation involved a great deal of work in determining exactly which items of expenditure could be attributed to plant and other assets, and which items could be treated as deferred revenue expenditure. The work would extend far beyond the two months available to the department before the last date of the financial year.

TABLE 3

CUMULATIVE NET BLOCK AND EXPENDITURE DURING CONSTRUCTION

(Rs. in lakhs)

Year	Cumulative net block	Cumulative expenditure during construction	(3) as % of (2)
1	2	3	4
1961-62	18.39	16.62	90.36
1962-63	249.86	43.99	17.6
1963-64	442.88	80.82	18.3
1964-65	580.91	129.74	22.31
1965-66	828.19	213.16	25.74
1966-67*	967.16	275.44	28.45

*Upto November 30, 1966.

However, it was decided to analyse the individual items composing the *Expenditure during Construction* in a thorough manner, so as to establish (*a*) the expenses that were directly connected with the installation of fixed assets like plant and buildings, (*b*) charges on supervision of construction, with reference to specific items of plant, which could be appropriately

capitalised, being in the nature of construction overheads, (*c*) the expenses on the overseas training of staff, and (*d*) the break down of other administrative expenses. In the last case, the intention would be to establish, wherever possible, the nature of benefits that would accrue from each item of expenditure, so that only those expenses whose benefits were spread over a period of time could be treated as deferred revenue expenditure.

It was clear that the values at which the fixed assets were shown in the balance sheets till then did not represent the entire costs attributable to them, for the accounting practice during the construction period was as follows : (*a*) The first cost, *i.e.*, the F.O.B. price, the ocean freight, the customs duty and the cost of transport to Ootacamund, was directly charged to the plant and machinery account. (*b*) Incidental expenses incurred in connection with the storage, handling and installation of the machinery were debited to the corresponding heads of account, but not to plant and machinery. (*c*) Salaries of supervisors and others engaged in the installation of plant and machinery were booked under salaries and allowances account. So it would be necessary to allocate appropriate portions of these expenses booked under the *Expenditure during Construction account* to the concerned items of capital expenditure. Table 4 indicates the nature of expenses, not capitalised but booked as *Expenditure during Construction* upto March 31, 1966. The largest single item is interest, followed closely by salaries and allowances.

While the bias was for treating these 2 major parts of the *Expenditure during Construction* as capitalisable, two factors required careful scrutiny on the other side.

(*a*) Expenses, which were directly related to current operations or trial-import sales, had to be isolated and kept outside the realm of capitalisation. In fact, care was always taken to identify such items every year and transfer them to the profit and loss account itself. The question of treating expenditure on advertisement and publicity as deferred expenditure was specifically considered; and the view was in favour of writing it off as an item of revenue expenditure, from year to year, since the expenditure was not on such a large scale as to be considered as having benefits over a period of years.

(*b*) There were delays in the construction and installation of machinery as well as in the commencement of production. Commercial prudence required careful judgment on the extent to which the delays could be considered as a part of the constructional hazards, characteristic of new technologies such as HPF represented, and the extent to which the delays were attributable to production difficulties of an ordinary nature in a manufacturing business or to production postponements or short-falls occasioned by lack of demand or managerial decisions. In the case of HPF, the latter was a far less important phenomenon than the former.

The decision was taken broadly to capitalise all the direct expenses attributable to items of fixed assets and 50 per cent of the indirect expenses composing the *Expenditure during Construction account.* The details of capitalisation of each item of expenditure are shown in Appendix 1.

Table 4 presents full data of the magnitude of capitalisation of *Expenditure during Construction* upto March 31, 1966.

Column 3 shows the amount capitalised through direct identification of expenses attributable specifically and indisputably to different items of fixed assets. Out of the total of Rs. 213.16 lakhs, an amount of Rs. 117.0 lakhs was capitalised in this manner. As regards the balance of unallocated expenditure which constituted about 40 per cent of the total *Expenditure during construction,* 50 per cent was reallocated to fixed assets and the remaining 50 per cent transferred to deferred revenue expenditure. Most of the interest, the biggest item, was capitalised, though a small part of it incurred after production started was transferred to deferred revenue expenditure. About a third of salaries and allowances and depreciation, and a little less than half of administrative expenses were treated as deferred revenue expenditure. The items of expenditure on French technicians in India was capitalised. About three-fourths of tender and employment advertisement expenditure, relating to civil works, was capitalised.

The values of the different items of fixed assets, exclusive of furniture and fittings, motor vehicles and library equipments, before and after the capitalisation process, are shown. The total net cost not taking into account depreciation was

TABLE 4

CAPITALISATION OF EXPENDITURE DURING CONSTRUCTION—UPTO MARCH 31, 1966

(Rs. 000's)

1	2	3(a)	3(b)	4	5	6
Head of Expenditure	Amount as on 31st March 1966	Amount capitalised	Amount treated as deferred revenue	Balance of un-allocated expenditure (2 minus 3)	Re-allocated to fixed assets (50% of Column 4)	Trans-ferred to deferred revenue (50% of Column 4)
Salaries and allowances	52.27	17.83	...	34.44	17.22	17.22
Company's contribution to P.F.	1.21	...	...	1.21	60.5	60.5
Staff Welfare Expenses	1.60	14	...	1.46	73.0	73.0
Rent (less recoveries from staff and contractors)	1.35	4	...	1.31	65.5	65.5
Rates and Taxes	29	2	10	17	8.5	8.5
Travelling and conveyance	3.60	66	...	2.94	1.47	1.47
Other Administrative Expenses (including postage, telegram, printing, stationery, electricity, etc.) Less Miscellaneous Receipts (including recoveries made on Workshop jobs)	9.75	1.29	...	8.46	4.23	4 23
Law charges	1.63	1.59	...	.04	.02	.02
Auditor's remuneration	31	...	...	31	15.5	15.5
Director's sitting fees	7	...	...	7	3.5	3.5
Advertisement and publicity	1.82	1.03	...	.79	.395	.395
Motor vehicles maintenance, operations and repairs	1.64	...	...	1.64	.82	.82

1	2	3(a)	3(b)	4	5	6
Repairs and maintenance	1.85	...	...	1.85	.925	.925
Interest paid (net)	84.95	68.25	...	16.70	8.35	8.35
Expenditure on Laboratory research	1.13	.49	.64	...	...	...
Expenditure on French Technicians in India	21.19	21.15	...	.04	.02	.02
Set-up and Training expenses	10.45	...	10.45	...	...	...
Architects' fees	4.20	4.20	...	...	...	...
Depreciation	13.47	.32	...	13.15	6.57	6.58
Loss on sale of assets Expenditure incurred on alterations of work written off	...	...	...	...	...	
Pre-incorporation expense	.38	...	...	.38	.38	...
TOTAL	213.16	117.01	11.19	84.96	42.86	42.29

Rs. 668.51 lakhs on March 31, 1966 before the allocation of the *Expenditure during Construction.* After the allocation, it rose by about 24 per cent, to Rs. 828.19 lakhs. The data indicate that the major debit went to plant and equipment; and buildings stood as a distant second.

After the major decision on the capitalisation of *Expenditure during Construction* was taken and implemented upto March 31, 1966, it was realised that difficulties in the start-up of production continued for a few months more and the management took the view that the conditions that justified the accumulation of expenditure under the head of *Expenditure during Construction* continued to exist beyond March 31, 1966. After intensive discussions in this regard, the management decided to treat December, 1966 as the appropriate date for start-up of production. The plant was fully erected in all departments, production and ancillary, by that date. The recruitment and training of initial staff, at supervisory and other production levels were completed by that time. The services ancillary to production, for example, power, fuel, lighting, airconditioning, steam and process water, and maintenance services in respect of break-downs and repairs were kept in proper condition. And adequate quantities of raw materials, chemicals and packing materials were procured and stocked. The collaborators sent twelve experts to assist in the start-up of the film base and coating departments during November and December, 1966; and they were satisfied that December 1, 1966 could be taken as the appropriate date when the factory went "into production".

For these reasons, it was decided that the earlier practice of capitalising 50 per cent of items of expenditure not directly identified under asset heads, should be adopted in respect of the expenditure upto December 1, 1966, and that both administrative and production expenses incurred after December 1, 1966 should be treated as operating expenses for purposes of financial accounts for 1966-67.

Of the total figure of *Expenditure during Construction* of Rs. 62.28 lakhs for the period, April 1 to November 30, 1966, Rs. 23.59 lakhs were treated as deferred revenue expenditure. Rs. 38.69 lakhs were capitalised; of this, Rs. 15.64 lakhs were capitalised by direct identification, Rs. 23.05 lakhs were capitalised by managerial decision.

TABLE 5

CAPITALISATION THROUGH DIRECT IDENTIFICATION AND ASSET VALUES ON 31, MARCH 1966

(Rs. in lakhs)

1	2	3	4	5	6
Assets	Cost as on 31-3-1966 less depreciation	Capitalisation of expenditure during construction			Total (2) + (5) values
		Through direct identification	On 50% basis	Total (3) + (4)	
1. Buildings	187.31	14.13	11.39	25.52	212.83
2. Land	11.78	0.29	...	0.29	12.07
3. Roads and approaches	6.91	...	...	...	6.91
4. Water Works	16.83	0.56	0.96	1.52	18.35
5. Plant and Equipment	433.38	102.03	30.31	132.34	565.72
TOTAL	656.21				815.88

Table 6 gives details of capitalisation of *Expenditure under Construction* through direct identification for the period April 1, to November 30, 1966. Once again interest and expenditure on collaborators' technicians were the major items, followed by salaries and allowances; and naturally, most of the capitalisation through allocation went to plant and machinery.

In the course of the decision to capitalise *Expenditure during Construction* from April 1 to 30 November 1966, the management was confronted with an interesting question, namely, whether the fact that production was anticipated during the year 1966-67 should cause a change in the 50 per cent principle. The management felt that most part of the financial year 1966-67 was governed by conditions of a pre-production period. In fact eight months out of the twelve months were of that nature. Hence 50 per cent basis was deemed appropriate for that year as well.

Nevertheless, the conversion department commenced production during July 1968 itself. So it was doubted whether it would be in the fitness of things to apply the 50 per cent principle with regard to the expenses traceable to this department. The items of expenses included salaries, materials, maintenance, service section and depreciation on plant and machinery. It was decided that these specific items, traceable to that department, should be isolated and booked under *Start-up and Training account.* It was with reference to the other expenses of HPF that the 50 per cent principle was unequivocally deemed appropriate for the first eight months of 1966-67.

The decision naturally involved distinction being maintained between the financial transactions upto November 30, 1966 and after; and with reference to the former period, the process of allocation between capital, and *Start-up and Training* was continued. With reference to the expenses incurred after December 1, 1966, an elaborate accounting exercise became necessary, involving the identification of all direct expenses in the conversion department, all expenses in the film base section from January 1, 1967 to March 31, 1967, the costs of the manager's office chargeable to film base and conversion departments for the respective periods of four months and three months, the costs of services directly concerned with film base and con-

TABLE 6

CAPITALISATION OF EXPENDITURE DURING CONSTRUCTION THROUGH DIRECT IDENTIFICATION

(1 April to 30 November 1966)

Item of expenditure	Plant machinery	Buildings	Electric installation	Roads and Approaches	Township	Land	Water works	Total
Salary and Allowances	62,617	34,754	43,097	5,328	46,677	...	6.061	1,98,534
Staff Welfare expenses	2,024	..	..	..	..	..	..	2,024
Rates and taxes	11,149	400	..	..	..	20	..	11,569
Law charges	1,972	— 583	— 20	..	..	19	..	1,388
Advertisement and Publicity	..	585	2,673	1,674	3,690	..	..	8,623
Travelling and Conveyance	212	2,588	1,089	..	..	..	..	3,889
Other Administrative Expenses :								
Bank charges ...	2,670	..	..	..	..	..	..	2,670
Electricity charges ...	85,314	..	..	..	..	..	..	85,314
Loose tools written off ...	301	..	..	..	..	..	..	301
Repairs and maintenance	..	..	..	3,362	..	..	..	3,362
Interest	8,82,325	..	..	..	..	..	..	8,82,325
Expenditure on collaborators' technicians	3,05,803	..	..	..	..	..	..	3,05,803
Hostel expenses	27,443	..	..	..	..	..	..	27,443
Drawing Office expenses	..	6,790	..	..	..	..	..	6,790
Trustee Commission	11,037	..	..	..	..	..	..	11,037
Depreciation	13,162	..	..	..	..	..	..	13,162
TOTAL	14,06,029	44,534	46,839	10,364	50,367	39	6,061	15,64,234

version departments for the respective periods on the basis of an estimate of the services consumed by these two departments, depreciation of plant relating to these two departments for the respective periods and an appropriate valuation of closing stocks in these two departments, which could be deducted from the items of costs enumerated above, so that the net expenditure in connection with the conversion and the film departments might be established. With reference to all the other expenses incurred from December 1, 1966, the accounting exercise consisted of segregating administration costs chargeable to construction, the charging of proportionate costs of administration and accounts to the profit and loss account on grounds of trial-import sales, on the same basis as in the previous years, the treatment of the costs of other production departments, for example, emulsion, coating and silver nitrate, as *Start-up and Training* costs and the accumulation of all other costs under the head of operating charges, and reclassifying them as deferred revenue expenditure.

In the balance sheet as on March 31, 1967, the figure of fixed assets appeared at Rs. 967.16 lakhs, and the figure in the deferred revenue expenditure account stood at Rs. 53.02 lakhs. To the latter was added a portion of pre-production expenditure incurred during the year 1966-67, namely Rs. 23.59 lakhs. In all, a total of Rs. 76.61 lakhs appeared under the head of deferred revenue expenditure in the balance sheet for 1966-67 and this was carried forward exactly at the same figure in the next year's balance sheet as well, since the financial position of HPF did not allow any portion of it to be written off during 1967-68.

It is relevant to add at this stage that, during the first year of production, namely 1966-67, HPF incurred a loss of Rs. 63.61 lakhs, consequent on its policies on capitalisation, allocation to deferred revenue expenditure and debits to current profit and loss account. At the end of the following year, the loss increased to Rs. 216.12 lakhs.

The purport of these figures may be explained in simple terms. HPF will be obliged to write off the debit balance standing under the head of deferred revenue expenditure and profit and loss account within the next few years. While there is no alternative with regard to the debit balance in the profit and loss account,

the burden of having to write off deferred revenue expenditure stood at the magnitude of Rs. 76.61 lakhs as a result of the capitalisation decision by HPF on the 50 : 50 principle.

We shall next examine the pros and cons of this managerial decision regarding capitalisation. The extent of capitalisation could have been larger on the following grounds.

(*a*) Basically, the expenditures accumulated under the head of *Expenditure during Construction* were incurred in the creation of the capacity to produce photographic products at HPF. In a broad sense, though not in the strict accounting sense, we have to understand the terms "capacity" in the sense not only of fixed and tangible assets like buildings, plant and machinery but also in terms of research and development, and technical skills for production purposes, for HPF is engaged in a new and sophisticated technology. If HPF had to pay a heavy sum by way of permanent acquisition of technology and skills from the collaborators, the amount would have been deemed an item of capital expenditure. If, in the alternative, the management decided as it did to enrich the technical experience and skill of local staff and make them fairly infallible, the expenditures concerned raised a controversy as to whether they should be capitalised or not. The sequence of events in HPF simply illustrates this latter phenomenon, so that pre-production expenditure on a prolonged time scale were incurred in investing local personnel with the required technical capacity to carry on production with less liability to failure than might otherwise have been the case. This may strictly be compared to the teething troubles one is familiar with in respect of the very installation and commissioning of plant and machinery. In terms of these arguments, HPF had justification to increase the proportion of capitalisation.

(*b*) To the extent that HPF capitalised expenditures during construction, it could claim allowance of depreciation and development rebate from income tax authorities. If, on the other hand, the amount has been transferred to deferred revenue expenditures, instead of being capitalised, the income tax benefit of expenditure admissibility would be totally lost. At the existing rates of income tax on companies, HPF loses the benefit of tax reduction of about 62 paise per every rupee that is not capitalised,

over a period of years. A rough estimate of the disadvantage may be suggested by stating that if the annual depreciation and development rebate reserve allowance is about Rs. 15 lakhs, an amount of Rs. 8.25 lakhs represents the saving in income tax liability per annum. It is true that, against this, the increased burden of depreciation presents itself as a recurring cost item. But there is another consideration that out-weighs this disadvantage. HPF is liable, on grounds of commercial prudence to write off the deferred revenue expenditure over a period of, say, five years and the annual depreciation to profit and loss account will be a sizeable fifth of the total figure under this head. We have to weigh this against the depreciation burden minus income tax relief. It is probable that HPF suffers, on balance, under the decision of capitalisation taken by it, on this ground. It may be noted that the write-off of deferred revenue expenditure, year by year, is not admissible to income tax relief.

(*c*) Let us assume that in course of time pricing regulation will be effected by the government in respect of the products produced by HPF. One of the well-known methods of price determination is, to compute the eligibility of an enterprise to net return on the basis of assets employed by it in the production of the out-put concerned. The gross block then becomes a vital basis. If HPF had decided on a higher extent of capitalisation, its eligibility to a higher figure of profit would have been more sustainable than under its present decision. Paradoxically, the basis for net return will be lower than it could otherwise be, while the profit margin, just for that reason, will be weaker correspondingly prejudicing the prospect of writing off the deferred revenue expenditure.

(*d*) The higher the allocation to the deferred revenue account, the greater the extent of write-offs in the subsequent years. These affect the break-even prospects of HPF adversely; for the annual debits to the profit and loss account will be heavy, in accordance with the annual quantum of write-off decided upon. For an enterprise, particularly a consumer goods unit, like HPF, an early break-even is preferable to a delayed break-even.

(*e*) If, on the other hand, HPF decides to write off the deferred revenue expenditure over a fairly long, rather than short,

period, the annual debits to the profit and loss account will be kept at a low level; but there is a serious loss on the non-financial front. The image of the enterprise suffers in the eyes of those that see the continuous recurrence of the intangible asset of deferred revenue expenditure in the balance sheet year after year over a long period. The unfortunate occurrence of debit balances of the profit and loss account also on the assets side of the balance sheet aggravates the image.

As against these considerations favouring the capitalisation of a relatively high proportion of the *Expenditure during Construction,* HPF had to reckon with two major considerations on the other side.

Firstly, there was a circular from the Ministry of Finance, Government of India, which conveyed disfavour for the practice of over-allocation to capital of the expenses incurred during construction. This, it was feared, would result in over-capitalisation of the enterprise.

It is understandable that HPF being a public enterprise, was influenced by the spirit of this communication to a great extent and decided to keep the capitalisation to the minimum possible extent. A point that could have been considered in serious detail, however, was that the proportion of capitalisation, high or low, would not make any difference to the quantum of interest charges on capital borrowed either as equity or as loans. The borrowings *were* there and ranked for dividend or interest, irrespective of whether the fixed assets were shown at a high or a low value. On the other hand, relatively low capitalisation would necessitate correspondingly additional debits to the profit and loss account resulting in a diminution in the dividend rates from year to year.

Secondly, one could argue, with some justification, that while the early part of the delays in the construction of buildings, installation of machinery and commissioning of production were natural or at any rate, beyond the control of HPF, the latter part of the prolonged gestation was of a slightly different nature; and the continuing items of expenditure were out of all proportion to the circumstances of a pre-production situation. A good part of the expenses stood at a level that would support

a far larger production activity than was actually undertaken. Hence the capitalisation should not be on the high side.

Considerations of commercial prudence also weighed with the management of HPF and influenced it to apportion to deferred revenue expenditure as much as 50 per cent of the indirect expenses under the *Expenditure during Construction account.*

It seems legitimate to make a concluding observation of the following nature. HPF's decision on capitalisation emerged in the circumstance of estimated full production and profit from 1969-70 onwards—in other words, in the hope of quick possibilities of writing off the deferred revenue expenditure. Unfortunately, the financial conditions in the years after the decision was taken have fallen short of its expectations, and losses have been incurred, the profit and loss account showing a debit balance of Rs. 420.54 lakhs by the end of 1968-69. Two questions may be raised, out of curiosity, if nothing else. Could the management have foreseen this financial possibility at the time when the decision on capitalisation was taken? And would the decision have remained the same, if a more accurate forecast of the financial position in the immediately following quinquennial period were available to the management of HPF at the time of the decision?

One last word on the relatively prudent capitalisation of expenditure in HPF. This meant keeping the figure of capital expenditure lower than it would otherwise have been. HPF had to work within ceilings of capital fund availability from government sources. The policy followed by it kept the room for demand for funds from the government larger than would have been the case had more expenditure been capitalised; and this must have been considered as important in HPF's strategy of resources for building up assets.

APPENDIX—1

DETAILS OF CAPITALISATION

Head of Account	Transfer to fixed assets	Transfer to deferred revenue expenditure
(1)	(2)	(3)
1. Salaries and Allowances	*Direct expenses :* The salaries and allowances paid to the civil, mechanical and electrical staff have been allocated to buildings, plant and equipment, roads and approaches and water works, taking into consideration the time spent by the staff for the construction, acquisition or erection of these assets. For this purpose, certificates were obtained from the Departmental Heads of the Engineering Department, who indicated therein, the time spent by their Assistants on various jobs. The salaries of the personnel, refrigeration and fluids Department were allocated to plant and machinery. *Indirect expenses :* 50 per cent of the salaries paid to the mechanical and wood working shop staff, laboratory staff, accounts department, administration section, production manager's section and M.D.'s salary.	50 per cent of the salary and allowances paid to the mechanical and wood working shop staff, laboratory staff, accounts department, administration, production manager's section and Managing Director' salary.

(1)	(2)	(3)
2. Staff Welfare expenses	*Direct expenses :* This includes expenditure incurred on the Company's buses for transporting the French Technicians from Ooty to the Company's factory. The buses of the Company were used both for the French Technicians as well as for the Company staff. To arrive at the portion of the expenditure which could be attributed to the French Technicians' transporation costs, the expenditure incurred on these buses was collected from the 'History register', 'Petrol and oil consumption register' and the General Ledger. The total trips made by the buses during the last three years were arrived at. The expenditure that has been allocated to the French Technicians is $\frac{a}{c} \times b$ where a = Trips made for transporting French Technicians; b = The total expenditure incurred on running buses; and c = Total trips made by the buses. The expenditure on buses includes depreciation thereon. *Indirect expenses :* 50 per cent of the balance of the expenditure. *i.e.* Total expenditure *minus* what has been allocated above.	50 per cent of the balance of expenditure. (Total expenditure less expenditure incurred on the French Technicians.)

(1)	(2)	(3)
3. Rent (Net)	*Indirect Expenses :* 50 per cent of the expenditure (net) incurred on this head.	50 per cent of the expenditure (net) incurred on this head.
4. Rates & Taxes	*Direct Expenses :* The import licence fee paid for plant and machinery, raw materials etc. has been transferred to the respective heads.	(*a*) Expenditure incurred for increasing the share capital will be debited to the Profit and Loss Account for the year ended 31st March, 1966.
	Indirect Expenses : 50 per cent of the expenditure under this head after the transfers made to plant and equipment and raw materials.	(*b*) 50 per cent of the total expenditure less the amount transferred directly by Profit and Loss Account, Plant and equipment and raw materials.
5. Travelling and Conveyance	(a) *Direct Expenses :* The travelling expenditure incurred by the civil staff, mechanical staff and electrical staff are to be debited to buildings, plant and machinery and electrical installations respectively.	50 per cent of the total expenditure less what has been allocated under the heads (a) and (b) in the previous column.
	(b) Travelling expenses of the architects have been debited to building.	
	Indirect expenses : 50 per cent of the total expenditure less what has been allocated under Direct Expenses—as above.	

(1)	(2)	(3)
6. Other Administration Expenditure (less miscellaneous Receipts) This includes expenditures incurred on postage, telegram, printing and stationery and electricity.	*Direct expenses :* (a) Electricity charges incurred for erection of machinery based on information given by the Divisional Engineer (Elec.) has been debited to plant and machinery.	50 per cent expenditure after the transfers to plant and machinery.
	(b) *Indirect Expenditure :* 50 per cent of expenditure after the above transfers.	
7. Law charges	(1) *Direct Expenses :* Stamp charges paid in respect of collaboration agreement entered into with *M/s. Bauchet*. Expenditure incurred in respect of agreements entered into with the civil contractors. (This would include the charge paid to the legal adviser for clarifying certain provisions in the civil agreement). Expenditure incurred for acquisition of land and for electric installation has been debited to these heads.	50 per cent of total expenditure after effecting the transfers at (1) in Col. 2.
	2. *Indirect expenses :* 50 per cent of total expenditure after effecting the above transfers.	
8. Auditors' Remuneration	*Indirect Expenses :* 50 per cent of total expenditure.	50 per cent of total expenditure.
9. Directors' sitting fees	*Indirect Expenses :* 50 per cent of the total expenditure.	50 per cent of total expenditure.

(1)	(2)	(3)
10. Advertisement and Publicity	*Direct Expenses :* The purpose of the advertisement has been the basis for allocating the expenditure incurred under this head, e.g. advertisement for calling of tenders for civil works has been debited to buildings and for acquiring or constructing, machinery, electric installation, roads and approaches and water works to those heads respectively. *Indirect Expenses :* 50 per cent of total expenditure after effecting the above transfer.	50 per cent of total expenditure after effecting the transfer.
11. Motor vehicles, maintenance, operations, and repairs.	*Indirect expenses :* 50 per cent of total expenditure incurred	50 per cent of total expenditure incurred.
12. Repairs and maintenance of assets.	*Indirect expenses :* 50 per cent of total expenditure.	50 per cent of total expenditure.
13. Interest paid (net). The interest received on advances made to staff, contractors and on bank deposits have been deducted from the interest paid to *M/s. Bauchet & Co.*, the State Bank of India and the Government of India.	*Direct expenses :* (a) Interest paid to *M/s. Bauchet & Co.* under the collaboration agreement has been transferred to plant and machinery. The trustee commission paid to C. N. E. P. Bombay, which has also been included under this head, has been charged to plant and machinery. (*b*) The company agreed to pay fees to *M/s. Bauchet & Co.* for redesigning of the buildings. The interest payable on redesigning charges has been transferred to buildings account.	50 per cent interest paid (net) less the amount transferred to plant and machinery and buildings under (a) and (b) at Col, 2.

(1)	(2)	(3)
	Indirect expenses : 50 per cent of the interest paid (net) less the amount transferred to plant and machinery and buildings under (a) and (b) above.	
14. Expenditure on laboratory and Research. This includes : (*a*) Lab. expenses. (*b*) Drawing office expenses. (*c*) Meteorological expenses.	*Direct expenses :* Drawing office expenditure has been transferred to buildings. *Indirect expenses:* As no expenditure has been incurred under Research, 50 per cent of total expenditure under this head after deducting the drawing office expenses.	50 per cent of total expenditure after deducting the drawing office expenses.
15. Expenditure on French Technicians in India. The expenditure under this head could include.	This has been entirely detailed to plant and machinery. Only the portion of the Hostel expenditure due to the French. Technicians has been transferred to this account. The information relating to occupancy was obtained from the hostel register. The hostel expenditure includes the electricity charges payable in respect of that building and depreciation on the hostel building and equipment.	
16. Start up and Training expenses.		Entire expenditure transferred to Deferred Revenue.
17. Architects' fees.	Transferred to Buildings.	
18. Depreciation	*Indirect expenses :* 50 per cent of total expenditure incurred under this head after deducting the deprecia-	50 per cent of the total expenditure incurred under this head

(1)	(2)	(3)
	tion on hostel buildings and company's buses, which have already been considered under the heads "Expenditure on French Technicians in India" and "Staff Welfare Expenses".	after deducting the depreciation on hostel buildings and Company's buses, which have already been considered under the heads "Expenditure on French Technicians in India" and "Staff Welfare Expenses".
19. Loss on sale assets. The entire expenditure under this head will be debited to the Profit and Loss Account for the year ended 31 March, 1966.		
20. Expenditure incurred on alterations on building work written off. The entire expenditure under this head will be debited to the Profit and Loss Account for the Year ended 31 March, 1966.		
21. Pre-incorporation expenses.	*Indirect Expenses* : The entire expenditure will be transferred to buildings, plant and machinery, electric installation and water works in proportion to the value of these assets as on 31 March, 1966.	

THE PRODUCT-MIX OF HINDUSTAN PHOTO FILMS MANUFACTURING COMPANY LTD.

PROF. V. V. RAMANADHAM

The Government of India had been for some time considering the need for promoting the production of photographic films, cine films and X-ray films, for which the country was dependent totally on imports. The Film Enquiry Committee, which considered the requirements of the motion picture industry, emphasised the desirability of establishing a factory for manufacturing photo-sensitized material including the raw films for the cinema industry.

The National Industrial Development Corporation Ltd., a public sector undertaking established for the promotion of industrial projects, particularly with the object of filling up strategic gaps in the country's industrial base, successfully carried on negotiations with *Societe Anonyme Des Establissments Bauchet & Cie* (*Bauchet*) towards the end of 1959, for helping in the establishment of a factory for the production of various photosensitised materials. *Bauchet* were agreeable to a specified time schedule of installation of machinery and of actual production. An agreement was signed between the Government and *Bauchet* on April 25, 1960.

Broadly the real beginnings of HPF's product-mix lay in the agreement. At least three major aspects of it could be identified at the outset. Firstly, the production programme depended on foreign collaboration, and the determination of the product-mix naturally depended on consultations with and cordial response from the collaborators. Secondly, the Indian party to the agreement was not HPF but the Government; and revisions in the product-mix would call for the formal approval of the Government. Thirdly, discussions on the product-mix had to proceed within the parameters of the agreement. Changes that affected any article of the agreement would obviously be difficult to implement, whatever their inherent attraction

might be from the product-mix angle. The agreement contained several areas of difficulty in interpretation and implementation.

Article II of the agreement laid down the following types and categories of products to be manufactured at the factory :

Positive Cine Film; Sound Cine Film; Negative Cine Film 100 ASA; Flat Film 100 ASA; Roll Film 50 ASA and 100 ASA; Graphic Arts Film, Orthochromatic & non-ortho X-ray Films Rapid and Screen types; Aero Films for high altitude photography; Bromide, Chlorobromide and Document-copying papers in various grades of contrast; and Colour paper.

In addition, colour positive cine-film and emulsions for nuclear research, were also to be manufactured provided that by the time the plant went into production with other categories, the supplier had completed his development work in respect of these products and was ready to place them on the market. Such changes in the product-mix would be permissible, as might be mutually agreed upon.

The capacity of the plant in respect of the different sections of production was indicated (See Table 1).

TABLE 1

PRODUCTION CAPACITY

Film base capacity	3 tons per day of 24 hours' operation
Coating capacity for ordinary grades	36,000 sq. m. per day of 24 hours' operation
Emulsion manufacturing capacity	26,000 sq. m. per day of 24 hours' operation
Cine film perforating capacity	360,000 linear metres per day of 16 hours' operation
Spooling capacity Roll Film	36,000 spools per day of 16 hours' operation
Slitting and cutting capacity Film	2,500 sq. m. per day of 16 hours' operation
Paper	6,000 sq. m. per day of 16 hours' operation.

Article III of the agreement required *Bauchet* to provide detailed project reports as per a time schedule. The first report

was to be submitted within four months from the coming into force of the agreement; the second within six months and the third and final report within eight months. Effective start of production should materialise within 26 months and acceptance tests should be completed within thirty seven months.

Article VII laid down the details of payments to *Bauchet*, the lump sum amount being $ 6,081,632 besides interest charges and charges for such services rendered by *Bauchet* as aftersales service and assistance for a period of five years after start of production in order that the production might be maintained and difficulties experienced in production removed. Separate payments were likewise contemplated for *Bauchet* making available to the Government the benefits of technological developments. The scales of payment year after year either in lump sum amounts or as a percentage on the net value of the sales turnover in the plant, whichever was lower, were laid down under Article XIX.

Article XIII referred to the performance tests which were to take place within four weeks from the time *Bauchet* notified to the Government that the installations were in readiness for operation. The nature of the performance tests was indicated briefly (See Table 2).

TABLE 2

PERFORMANCE TESTS

For Film base	(a) during 24 consecutive hours as regards the quantity produced
	(b) during 8 consecutive days as far as solvents consumption is concerned
For the emulsion coating	(c) during 24 consecutive hours
For the finishing	(d) during 8 consecutive hours
For characteristics and general quality	(e) on production of a minimum of 300 sq. metres of each product listed in Annexure II.

The tests were to be conducted on two occasions with an interval of at least two weeks.

Under Article XV, production in the first two years after the start would be confined to cine film positive; X-ray film, some negative material and paper being taken up only in the third year and thereafter; and full production would be reached in the fifth year. Another clause under the same Article stipulated that the products should conform in general to the quality of good commercial products as sold in the international market in 1960.

Article XVI provides for compensation which *Bauchet* would be liable to pay for a short-fall in the production capacities below the agreed levels.

HPF was formed as a government company on November 30, 1960 and assumed the agreement on behalf of the Government of India. The prime responsibility for the product-mix and the desirable changes in it rested on this company since then.

The collaborators who signed the agreement were *Bouchet.* In the early years of the project construction, *Bauchet* sent their experts for assistance to HPF at Ooty. In 1963, the controlling interest in the firm of *Bauchet* was taken over by *Minnesota Mining and Manufacturing Company* (3–M's). Later the 3–M's absorbed a leading photographic concern of Europe, namely *Ferrania* of Italy. These changes on the side of the collaborators are of significance in the context of making available to HPF technologies far superior to those that could be obtained from the original *Bauchet* firm. Otherwise, these made little difference to the implementation of the agreement as between the Indian side and the collaborators. The technical superiority of the 3–M's was reflected in the discussions on the revisions in the product-mix. For the convenience of the study we shall, however, refer to the foreign collaborators as *Bauchet* throughout.

The Detailed Project Report (DPR) followed the agreement after a few months. The targets cited in the DPR were in consonance with those contemplated in the agreement. The product-mix outlined in the DPR is shown in Appendix 1.

In broad terms, the product-mix of HPF has been under the influence of four factors; (a) technical inter-dependence in the production processes, (b) the demand conditions, (c) the economic viability of the project and (d) the emphasis on skill

formation. We shall analyse the implications of each of these factors in some detail.

HPF has been concerned, not with a single product, but with a product-mix. In a sense this is a case of product diversification, though within a close range of technological likeness. The main processes in the manufacture of the photo film items contemplated by HPF are base-casting, emulsion, coating and conversion. Bromide paper gets fed into the manufacturing schedules after the emulsion stage. Each process rests on the work of the earlier proceses; the coating or conversion section, for example, cannot function without the functioning of the sections concerned with emulsion and base-film. Thus there is a close operational and technological inter-relationship between one section of the factory and the other. What lends relevance to this consideration from the standpoint of the product-mix is that several products, different from one another in use and value, can be produced almost simultaneously from these sections. Hence it has been the concern of HPF to hit upon the most appropriate product-mix from the technological point of view; particular care would be necessary to ensure that production activity is so balanced that the change-over of the production apparatus from one product to another causes minimum curtailment of production.

The outlay on these sections of the factory may be considered as common in most part. Within limits, it can be generalised that almost all these sections are necessary for the production of even one of the end products visualised by HPF, for example, the roll film. While nothing physically prevents HPF from concentrating on a single product, the optimum size of capacity in this line of manufacture happens to be rather large and the output that can be realised from out of the optimal capacity and installations is of a large size—so large indeed that demand falls far short of the output. Thus, on grounds of economical production, HPF has had to go in for a product-mix instead of a single product. The problem therefore is in determining which items of output constitute the most appropriate product-mix from the technological, economic and other angles. The investment complementarity involved in the production plans of HPF is illustrated by the figures of capital expenditures

on plant and machinery incurred upto the end of January 1969, *vide* Appendix 2.

Nearly half of the total outlay cited in Appendix 2 relates to the most basic section, namely the film base, from which the possibilities of diversified production emerge. It is only in the case of bromide paper that the preparation of the film base is unnecessary; but then the main output in physical as well as financial terms happens to consist of other products, particularly, cine positive and X-ray.

The manufacturing processes and sequences of HPF are outlined in Appendix 3, which helps one to appreciate the technological inter-relationships among the several items constituting the product-mix of HPF.

The project of photo film manufacture was conceived at a time when accurate facts of the demands potentialities were not available. It appeared generally true that India was dependant on imports for cine films and other films and that there was great scope for achieving self-sufficiency in these and other directions such as the medical X-ray films. This prompted the government to go ahead with the project and arrange for the necessary foreign collaboration. In other words, the concept of having to produce photo films was undoubtedly valid, but the qualitative and quantitative composition of the different products could not be scientifically formulated at the stage of project-conception.

As HPF began to be impressed by the trends of demand in the country for the different products contemplated by it, it could give effect to its knowledge of demand conditions only in consistency with technological potentialities of its installations on the one side and more importantly, with the terms of the agreement which laid down the nature and extent of the rights and responsibilities of *Bauchet vis-a-vis* the product-mix.

The product-mix should be so designed as to bring about the maximum aggregate net revenue for the concern. As long as the cost conditions of the different possible products are different, and their demand conditions are also diverse, possibilities exist of varying net revenues from the different constitutents of the output; and an efficient management, other things being equal, generally tries to go in for an expansion in those lines that promise relatively large net revenues, while contracting, parti-

cularly when technologically necessary, outputs in those lines that offer relatively low net returns.

The manufacture of photo films is a relatively new art involving highly sophisticated technology. It would be in the long term interest of the country, which HPF had to keep in mind as a public sector enterprise, to determine the product-mix so widely, in some elements so intensively, and so time-phased that we would be able to secure the utmost benefit of foreign technical know-how. It is for this reason that an early commencement of manufacture of certain items may have to be subordinated sometimes to the prospect of acquisition of skills over a wider range of outputs.

Though the agreement visualised the commencement of production 26 months after its coming into force and acceptance tests taking place within 37 months, these proved to be unrealistic forecasts. How could production commence in 26 months when out of this period 10 months were to be devoted to preparing the DPR itself? The construction of the buildings and the erection of the machinery at Ooty took its own time. The first production building commenced in April 1962, by which time the machinery should have been installed according to the agreement. The second building took longer to complete : and the buildings housing the administration and laboratory were ready only in August 1965. Equipment was installed in a fairly complete form by October, 1966.

These changes in the time schedule of the construction programme have some relevance to the question of the product-mix Till about 1964, serious discussion of the most desirable product-mix and of any possible revisions in the original pattern contemplated in Annexure 2 of the agrement, seemed to be too premature. Every one concerned was anxious to deal with the problems encountered in the completion of buildings and the erection of equipment. The long gap of time between the agreement and the time of actual manufacture gave both HPF and *Bauchet* time for re-thinking on the vital subject of the product-mix.

In January, 1964, *Bauchet* came up with proposals for a revised product-mix. They opined that the production programme contemplated in the agreement was too ambitious and its fruition would depend substantially on the development

of local skills at HPF. They desired to limit the product-mix mainly to cine film positive and medical X-ray (screen type) and offered to give performance tests with reference to these products only, by about January, 1966. They proposed that the other products of Annexure 2 of the agreement could be developed by HPF itself in course of time under the advice and assistance of *Bauchet*. In order to compensate for the outlays on such local development at and by HPF, *Bauchet* agreed to finance a pilot coating plant at a cost of $ 50,000.

Further clarifications as well as revisions of these proposals were communicated by *Bauchet* in November, 1964. They wanted a reduction in the range of products envisaged in Annexure 2 confining it to the following items; cine film positive, medical X-ray screen type, roll film (620, 120, 127 and 35 m.m. Leica with one negative emulsion only of a popular speed like 120 ASA) and bromide paper. The other products, *Bauchet* suggested, should be developed by HPF itself with the aid of the consultancy services that *Bauchet* would provide as per Article XIX of the agreement. These other products were : sound cine film, negative cine film 100 ASA, flat film 50 ASA and 100 ASA, graphic arts, orthochromatic and non-ortho, aero film for high altitude photography, chloro-bromide and document-copying paper and colour paper. The proposed revision in the product-mix envisaged the production of certain items at the end of the fifth year (See Table 3).

TABLE 3

OUTPUT AT THE END OF THE FIFTH YEAR OF PRODUCTION

Items	Quantity	% of total
Cinefilm positive	2.67 $m.m^2$	52.8%
X-Ray	0.50 $m.m^2$	9.9%
Flat film	0.15 $m.m^2$	3.0%
Roll film	0 25 $m.m^2$	4.5%
Paper	1.50 $m.m^2$	29.7%
TOTAL	5.07 $m.m^2$	99.9%

Discussions were held between HPF and *Bauchet*, as a result of which two lists were proposed—A and B as shown in Tables 4 and 5.

TABLE 4

A : PRODUCTS IN PESPECT OF WHICH PRODUCTION WAS TO BE ESTABLISHED IN FULL

(a) Cine film positive	1964-65 quality, 100 per cent coagulation formula, production 1965.
(b) Medical x-ray, screen type rapid	1964-65 quality, production 1965.
(c) Roll films and leica	200/250 ASA, 1964/65 quality, production 1966.
(d) Portrait film	Speed 200/250 ASA, 1964/65 quality, production 1966.
(e) Plastibrom	Production 1966.

The quality levels of the products and the testing methods were to be decided upon after supply of suitable samples by *Bauchet*.

TABLE 5

B : PRODUCTS IN RESPECT OF WHICH KNOW-HOW AND TECHNOLOGY SHOULD BE FURNISHED BY BAUCHET AND DEVELOPMENT WORK CARRIED OUT BY HPF; LOCAL SERVICES IF REQUIRED FROM BAUCHET TO BE GOVERNED BY PROVISIONS OF ARTICLE XIX

(a) Graphic Art film (2 grades)
(b) Sound cine film
(c) Negative cine film
(d) Aero film
(e) Colour paper.

Besides 1964-65 quality and 100 per cent coagulation formula for cine positive, *Bauchet* should also include know-how and technology for cine film colour positive; HPF would be prepared to discuss the refixation of royalties stipulated in the agreement, if colour positive was included.

In lieu of the relaxation of *Bauchet's* obligations implied in the re-formulation of the product-mix on the above lines,

HPF not only desired to gain by the provision of 1964-65 formulae (as against the agreement's 1960 formulae) in respect of the films, but also sought a technical compensation in the shape of know-how and technology in the manufacture of cine film colour positive, which it would desire to take up later. If necessary, HPF was prepared to refix the royalties suitably in the latter case.

Bauchet's proposals for a revision of the product-mix, especially in the context of their obligations under the agreement, set the Board of Directors thinking seriously on this question. It set up a sub-committee in April, 1964 to look into several aspects of the product-mix. One of the questions discussed by the sub-committee was the possibility of omitting any of the products originally envisaged in the agreement due to changed market conditions. It was assumed that the delection of cine film negative 100 ASA would not be advisable, though it would be an advantage to get *Bauchet* to agree on providing a higher speed cine negative film (200 ASA or more). Nor was it felt desirable to omit X-ray film of the standard type and the roll film 50 ASA. Probably the deletion of one item, chloro-bromide paper, could be favourably considered, in view of the poor demand for that product. However, this being one of the several kinds of papers contemplated in the product-mix, there would be no great disadvantage in retaining it; and the manufacture of this product would not prejudice the over-all production schedules of HPF.

The committee had also to work out the fees payable to *Bauchet* for technology among the various categories of products to be produced at HPF. If the allocations were made on the basis of the turnover figures of the different items of the product-mix, relatively small amounts would fall to the share of the products that could at all be deleted. By deleting them, HPF could at best save very minor amounts towards payments to *Bauchet* for technology. In fact, the deletable items were those belonging to the same field of technology which had to be acquired for the sake of other products. Hence there was little point in approaching the question from the angle of saving fee payments to *Bauchet*

The sub-committee and the Board were next concerned with the relative viability of the project under the original and the revised product patterns. The comparative data stood as

follows. The sale value of the product-mix consisting of the new list of thirteen items would total to Rs. 923.35 lakhs at the end of the fifth year of production (1969), as compared with the corresponding figure of Rs. 796.9 lakhs from the eleven items of the DPR product-mix (See Table 6). The new product-mix implied a severe reduction in the output of cine film positive, an addition in X-ray, roll film and bromide paper, and the addition of two items, aerial films and plastibrom.

The Managing Director himself came to the view that no deletion of any of the important products included in the original list of the agreement would be advisable at this stage. The Chairman opined that the items mentioned in the agreement could be classified into three categories as follows :

(*a*) Products in respect of which, because of technological intricacies, it was essential that *Bauchet* should be asked to carry out the acceptance tests in full (List A).

(*b*) Products in respect of which the intricacies are not so severe that HPF should perhaps carry out the necessary initial trials on the basis of full technology to be provided by *Bauchet* (List B) and

(*c*) Comparatively simpler products for which HPF's staff have received the necessary training at Paris and might handle the matter independently (possibly bromide paper and document copying paper).

Besides these, the Chairman considered it as possible to add certain new products, in particular, the colour cine film positive.

List 'A' would limit *Bauchet's* overall responsibility to six items—cine film positive, medical X-ray (screen type rapid), roll film (120, 620, 127 and Leica 25 m.m.) portrait film and plastibrom. These would account for 3.4 million sq. meters, failing short of the DPR figure by 2.4 million sq. meters in capacity. The sale value would be Rs. 647.5 lakhs a year, which would be short by Rs. 149.40 lakhs when compared with the estimate of the DPR. Another significant aspect of this list lay in the substitution of two major items, namely document-copying paper and bromide paper with plastibrom.

The advantages flowing from the bifurcation of the items of production into lists 'A' and 'B' were estimated to be as follows. As regards cine positive, the new proposal was for the

TABLE 6

PRODUCTION PROGRAMMES AS PER DPR (1961) AND AS PER 1964 DISCUSSIONS

Product	Fifth year (1967) (DPR)		Fifth year (1969) (1964 discussions)	
	Million Sq. Meters	Sales Value (Rs. lakhs)	Million Sq. Meters	Sales Value (Rs. lakhs)
1. Cine film positive	2.98	298.00	2.00	200.00
2. Cine film sound	0.24	26.40	0.20	22.00
3. Cine film negative	0.18	36.00	0.25	50.00
4. X-Ray	0.50	127.50	0.80	204.00
5. Graphic Arts	0.05	12.00	0.05	12.00
6. Portrait film	0.10	32.00	0.05	16.00
7. Roll film	0.22	88.00	0.45	180.00
8. Leica	0.02	16.00	0.05	40.00
9. Bromide paper	1.20	126.00	1.45	152.25
10. Document Copying paper	0.25	15.00	0.41	24.60
11. Colour paper	0.05	20.00	0.03	12.00
12. Aerial film	—	—	0.01	3.00
13. Plastibrom	—	—	0.05	7.50
TOTAL	5.79	796.90	5.80	923.35

100 per cent coagulation process for the emulsion and on 1964-65 quality, as against 1960 quality originally envisaged in the agreement. Similar would be the improvement in medical X-ray from 1960 to 1964-65 quality. With regard to roll film, Leica and portrait film, *Bauchet* would give not only 1964-65 quality but faster films of 200-250 ASA as against the 100 ASA mentioned in the agreement. *Bauchet* would obtain the technical know-how (which they themselves did not possess) for the production of cine film colour positive—a product with great potentialities of demand—from their sister concern *Ferrania* and supply it to HPF; this was not contemplated in the original agreement at all.

As against these advantages, HPF had to reckon with the need to invest additional outlays on modifications in the equipment and commit itself to payments for new technologies and know-how expected of *Bauchet*, particularly with regard to cine film colour positive. The total cost of developmental work was to be borne by HPF. A slight reduction was possible in the quantities and turnover values of the list 'A' outputs as against the originally contemplated complete range of products of the agreement; this had to be adjudged in the light of a long term advantage to HPF, namely good follow-through on a narrower range of products instead of the mere establishment of a wider range. In the context of skill formation, this arrangement had its own merits. Besides, the start of production of medical X-ray during the first year of operation would be a concrete benefit; it would be recalled that the agreement envisaged HPF leading a one-product existence for two years before beginning the manufacture of any other products.

When negotiations were initiated with *Bauchet*, in 1965, HPF felt that the discussion should be non-committal since the approval of the government would be necessary for any possible changes in the provisions of the agreement. HPF enquired of the government for its views on the revision of the product-mix, but received the reply that it was not possible for the government to express an opinion on the questions without having complete knowledge of the implications of the revisions in the product-mix. While the government desired to have the final proposals arising from the discussions between HPF and *Bauchet*, it wanted information particularly on the following

points : the advantage that would accrue to HPF as a result of the revision, the extra expenditure entailed by the revision, additional royalties, if any, that the new categorisation of products into different lists might involve, and the overall economic viability of the project. HPF naturally took sometime not only to present the conclusions of the discussions with *Bauchet* in a crystallised form but to collect the data required by the government.

Another consideration which was in the background of discussions between HPF and *Bauchet* and had the effect of slowing down the discussions was that HPF did not desire to embarrass *Bauchet* with arguments, proposals and counter-proposals at that time when the installations in many departments, particularly the service departments, were at an advanced stage. It was considered wise to avoid possibilities of controversy on the product-mix at that stage as far as possible.

Bauchet themselves felt strongly that it would be desirable to postpone the discussions for some time pending clarifications of some of the material provisions of the agreement relevant to the product-mix. Further, *Bauchet* deemed it necessary to observe and evaluate the talents and skills of HPF at different levels, because this would be one of the factors determining *Bauchet's* commitments under the revision of the product-mix, particularly into lists 'A' and 'B'.

Consequently, informal and tentative discussions took place during the latter half of 1965. These discussions instead of resulting in a satisfactory solution to the various outstanding issues widened the area of controversy. A stalemate began to develop which could possibly prevent even the establishment of production of cine film positive, black and white, a product to be manufactured in the first year itself under the agreement.

No further progress was achieved in the finalisation of the proposals for quite some months as other problems (like acceptance test procedures) claimed all attention. In January, 1966 a new Managing Director took over. The new Managing Director after reviewing the prevailing situation felt that the problems relating to cine film positive should be first settled, not only for the early commissioning of the plant but also for providing enough confidence to both parties for tackling the more complex issues relating to other products. Hence all

attention was focussed on the outstanding issues relating to cine film positive, the manner of testing the equipment, and the steps necessary for establishing production. These matters were discussed intensively and settled early in February 1966. In March, 1966, *Bauchet* sent an important communication to HPF, on the following lines in regard to the other products. While *Bauchet* were preparing the despatch of materials required for X-ray in accordance with 1960 formula, they felt it highly necessary to suggest to HPF the desirability of agreeing on the 1965 formula. Several advantages would flow from the latter. The time and the expense involved in preparing 1960 quality samples would be saved. Even if 1960 samples were first insisted upon, it would only be a matter of time for HPF to realise the imperativeness of developing X-ray films of later, for example, 1965 formulae; and then the effort and expense would be repeated to no purpose. While 1960 samples would be established by *Bauchet*, its substitution by 1965 formula would devolve primarily on HPF in due course.

The problem faced by HPF was not merely one of what products and how much of each to produce, but of the quality of each product contemplated as well. In the field of manufacture in which HPF was engaged, a product had little meaning without reference to its technical characteristics, particularly the fastness of the film and its suitabilities for medical and other purposes. Another complication of substituting later formulae for 1960 formulae was that. since the agreement was in terms of 1960 formulae and provided for extra payments to *Bauchet* for improved technology, under which head 1965 formulae would come, HPF would have to pay more to *Bauchet* for the quality improvements sought in the product-mix.

Bauchet argued that the underlying idea of drawing up the lists 'A' and 'B' was that they should be released from the obligation of developing the products in list 'B'; they would simply provide HPF with the formulae and the necessary advice on their manufacture. In lieu of this relaxation, *Bauchet* would be willing to offer HPF 1965 formula for the production of X-ray and start the manufacture of this product. *Bauchet* were naturally anxious to have a clear decision from HPF on whether HPF wanted 1960 formulae or 1965 formulae; for, on this decision depended the exact pattern of responsibility that *Bauchet*

had to undertake in respect of establishing production and/or providing know-how at HPF. As a measure of prudence, *Bauchet* withheld the immediate shipment of the materials required for 1960 quality of X-ray sought to be produced, originally, under the agreement.

HPF had a mixed reaction to this communication from *Bauchet*. It thought that there was some deviation between the spirit of the earlier discussions, on the one hand, and the latest proposal by *Bauchet*. For example, the proposals of December 1964 envisaged 1964-65 formulae for all products of list 'A' as well as the establishment of production and technology for colour film positive. The proposals of December 1965 envisaged *Bauchet* establishing the production for six months in all products of list 'A' except the cine film positive. On the other hand the latest proposals, of March 1966, provided only for the offer of 1965 formula for X-ray and its start of production, as a compensation for the list 'B' being drawn up. Neither the establishment of production of X-ray nor that of the other products in list 'A' was contained in these proposals. Several alternatives struck HPF as possile. Firstly, they might stick to Annexure II of the agreement. Secondly, *Bauchet* might be asked for 1965 formulae for all products of list 'A' and for the start-up and establishment of production for six months in respect of each one of them except cine positive, *Bauchet* furnishing only the know-how as regards the products of list 'B'. Thirdly, *Bauchet* might be asked to provide quality samples for every product of list 'A' and establish production for one year of X-ray of 1965 quality; as regards list 'B', only formulae of manufacturing particulars might be asked for. Fourthly, in return for the relaxation implied in the drawing up of list 'B', *Bauchet* might establish production of cine film colour and X-ray for six months, and the royalty clauses concerned might be modified suitably as regards the other products of list 'A'; only quality samples might be insisted upon.

Continuing the discussions, HPF communicated its reaction to *Bauchet's* proposals on the following lines. Firstly, there seemed to be a departure by *Bauchet* from earlier agreements from which HPF inferred that *Bauchet* would give 1964-65 formulae not only for X-ray but for all the products of list 'A' and that *Bauchet* would not only start but establish produc-

tion for six months. Secondly, HPF would like to be assured that list 'B' would include cine film colour positive as well, under certain conditions. Finally, the matter would have to be considered as a whole by the Board of Directors in due course; and, if the differences continued, there would be no option but to go back to the agreement. HPF expressed surprise at the unilateral withholding by *Bauchet* of shipments in respect of X-ray manufacture.

Bauchet responded with a forceful reiteration of their earlier suggestions. In the first place, they denied that there was an agreement in December 1964 as a result of the discussions held at that time. Those discussions were exploratory and tentative. Their approach had always been as follows. The programme of performance tests would be divided into two phases. The first phase would consist of the preparation of two 300m² samples in respect of list 'A' products. In the case of cine film positive which was included in list 'A', *Bauchet* would accept to ensure start of production also. The list 'A' products accounted for about 88 per cent of the final production capacity envisaged in the original contract amounting to an annual output of 5.89 million m². The remaining products, described as list B, account for 0.86 million m² a year or for about 12 per cent of the total volume of production.

The second phase, subject to agreement being reached on list 'B', would consist of the start of production of medical X-ray of the appropriate 1964 or 1965 quality. If an agreement were not arrived at or if HPF continued to remain undecided whether to ask for 1960 or 1965 quality, *Bauchet* would have no choice but to go by the agreement in preparing the 1960 sample, at the end of which in all probability the latest technology would impress itself on HPF as irresistibly urgent, causing a complete repetition of the effort and a consequent duplication of expenditure. And the second phase would consist of *Bauchet* preparing the samples for the sake of quality acceptance in respect of the products of Annexure II of the agreement. For reasons of technology, this would imply the use of machines in such a way that the production of cine film would be delayed considerably.

Bauchet feared that HPF was trying to pick up the best features of all the prolonged but tentative discussions. For

example, HPF would desire to have 1964-65 quality for all the list 'A' products; but it should not be overlooked that it followed that corresponding enhancements in the royalties payable to *Bauchet* should also be contemplated.

Bauchet took the view that 1965 quality medical X-ray was highly necessary in the Indian market and that their offer to HPF in this respect was a big concession. It consisted of (a) help in the start of production; (b) committing themselves to a certain amount of manufacturing wastes and (c) giving HPF six months of free technical help to establish production. In exchange for this valuable concession, *Bauchet* would expect relaxation in HPF's insistance on the start of roll film, flat film and bromide paper.

At several points in the communication, *Bauchet* referred to the disadvantages flowing from HPF's indecision as regards the exact quality preferred by it, 1960 or 1965; for one thing, on this would depend the specifications of quality that *Bauchet* should suggest and the raw materials that would be necessary. Delay was inevitable in the whole process, in the absence of HPF's basic decision in this regard.

Bauchet finally affirmed that they would not mind going back to the agreement, in the absence of successful negotiations as regards the revision in the product-mix; but it was clear to them that it would be in the economic interest of HPF itself and appropriate to the Indian market that HPF should seek a revision in the product-mix, quality-wise and list-wise.

To the continued demand of HPF for the inclusion of at least the start of roll film manufacture and the subsequent free technical assistance for six months in the revised product-mix, *Bauchet* replied that this would involve far too heavy demands of technical manpower and expense on their part. They feared that it was HPF's inexperience in visualising the technical implications of the demand that encouraged it to insist on it.

If, however, the roll film should be available in the Indian market at an early date, *Bauchet* would suggest a plan; HPF could import Jumbo roll and finish it up into roll film at its own factory. This would have three advantages :

(*a*) a great deal of foreign exchange would be saved by the country,

(*b*) HPF staff would gain experience in this new field; and

(*c*) the product could be given the trade name of HPF, INDU, which would become popular in course of time and establish its own subsequent production. At a later stage, when HPF established itself in the production of X-ray, *Bauchet* would offer technical assistance for the complete production of the roll film subject to the financial provisions of Article XIX. (The 1967-68 turnover of HPF included a sizeable segment of imported items converted or finished at HPF and sold under the INDU label, vide Appendix 4).

The Board of Directors had a final round of discussions on the product-mix and allied matters during April and May, 1966. The Managing Director, who actively and meticulously attended to the question in the long-term interest of HPF, impressed on the Board the advantages of concentrating on a limited number of products which enjoyed a good market and would, therefore, yield sizeable surpluses, while in the case of the other products, for which the markets were yet limited, HPF should be content with obtaining the necessary technology from *Bauchet*. It would be worth while for HPF to think in terms of three categories of products; (a) category in respect of which full production would be established by *Bauchet* for six months: cine film positive 1965 quality, X-ray 1965 quality and roll film 1965 quality, (b) category in respect of which *Bauchet* would provide 1965 formulae and samples for characteristics and quality tests—leica, portrait film and bromide paper; and (c) category in respect of which *Bauchet* would only supply technology—cine film sound, cine film negative, graphic arts, documentary paper, aerial film, colour paper and chloro-bromide paper. The Board still desired that another effort should be made to get *Bauchet* to agree to the establishment of full production of cine film colour positive, subject to royalty provisions. It was realised by the Board that the discussions should be finalised in a manner that would not delay or otherwise prejudice the objective of establishing production of cine film positive during 1966-67.

While finalising the product-mix revision during May 1966, the Board of Directors fully appreciated the exact difference between the 1960 and 1965 qualities of X-ray. The Managing

Director explained that the main difference lay in the higher speed of the 1965 X-ray emulsion, which would enhance its value in diagnostic work involving the taking of a large number of pictures of a given subject within a short period. This medical procedure might prejudice the health of the patient, if the X-ray film had a slow speed. It was the considered opinion of the Indian Radiological Association that a fast film, conforming to modern techniques, was needed by the medical profession. The Managing Director had always been of the opinion that HPF should acquire technology that approximated to the latest formulae prevalent at the time when production was established.

Another reason, mentioned by the Managing Director, underlying the approach of *Bauchet* was that the 1965 formulae were developed by them at great expense; this field of manufacture was so sophisticated that considerable expenditures were involved in the commercial development of the formulae.

It would not be in the interest of HPF to be satisfied with the 1960 formula in the hope of developing the 1965 film by itself; the latter would entail heavy wastages during production, the more so, if the local skills at HPF were not up to the mark. A revision in the product-mix that placed the responsibility for the establishment of production of the 1965 X-ray film on *Bauchet* itself would totally relieve HPF of this serious problem.

The Board also appreciated *Bauchet's* view that the establishment of production of an additional product, namely the roll film, would impose on them burdens far heavier than the relaxation of their obligations resulting from the formulation of lists A and B. Hence the roll film would only be included in the list 'B'.

The revised product-mix approved by the Board of Directors, along with the DPR pattern, is shown in Table 7. The deviations between the two sets of targets, are due to considerations of demand potentialities and market conditions *vis-a-vis* each product.

At this stage, we may refer to the efforts of HPF in evaluating the demand conditions in respect of its main products. Till the begnning of 1965, no systematic market survey was contemplated at all by HPF. A proposal was initiated in January,

TABLE 7

PRODUCTION PROGRAMMES AND SALSE VALUE

Products	As per D.P.R.		Final revision	
	Quantity (Mill. Sq. M.)	Sale value (Rs. lakhs)	Quantity (Mill. Sq. M.)	Sale value (Rs. lakhs)
1. Cine positive (1 grade)	2.980	298.00	2.00	200.00
2. Cine sound (1 grade)	0.175	19.25	..	..
3. Cine Negative (1 grade)	0.248	49.60	..	..
4. Medical X-ray (1 grade)	0.500	127.50	1.00	255.00
5. Graphic arts (2 grades)	0.150	18.00	..	..
6. Portrait film (1 grade)		24.00	0.05	16.00
7. Document paper (2 grades)		24.00	..	..
8. (*a*) Bromide paper (2 grades)	1.500	111.30	1.45 (3) grades)	152.25
(*b*) Chlorobromide paper (4 grades)		12.00	..	..
9. Colour paper (1 grade)		..	..	..
10. Roll film (2 grades)	0.217	86.80	0.45 (1 grade)	180.00
11. Leica (1 grade)	0.028	22.40	0.05	40.00
12. Aero film (1 grade)	..	..	..	.
TOTAL	5.798	793.45	5.00	843.25

1965 for a market survey, but somehow this was in cold storage till April 1966 when the Managing Director, who had just taken charge of the post, realised the urgency as well as the appropriateness of promoting a market survey. Though the view was expressed by certain sections of the management that the market survey could be deferred till such time as HPF actually entered the markets, the Managing Director took the view that the market survey should precede the actual serving of the market. After due negotiations, HPF entrusted the market survey, in February 1967, to the Marketing Research Corporation of India Ltd., which was asked to provide the quantitative details as regards the demand for photographic materials during 1964-65, as well as the forecasts for 1967-69, analyse brand preferences and the reasons therefor, and obtain specific information with regard to the photographic films.

Once HPF decided on the final shape of the product-mix and related matters involving the foreign collaborators, it communicated the details of the revisions to the government on the following lines.

(*a*) Revisions as regards acceptance tests did not call for any modification of the agreement, and letters of exchange between *Bauchet* and HPF were deemed to be enough. As regards the product-mix, no modification to the agreement was considered necessary, since the agreement provided for such changes in Annexure 2 as might be mutually agreed upon; hence Annexure 2 A would be substituted for Annexure 2; and *Bauchet*, in return, would provide certain additional services. The questions relating to modifications in the equipment with regard to new products like cine positive colour and incidental royalties, would be dealt with separately and directly with *Ferrania*, without having to modify the agreement.

(*b*) Annexure 2A, which HPF communicated to the government included the following items.

1. Cine film positive—1 grade
2. Flat (portrait) film—1 grade.
3. Leica film—1 grade

4. Roll film—1 grade
5. Medical X-ray film rapid screen type—1 grade
6. Bromide paper—3 grades.

(*c*) *Bauchet* would provide (1) 1965 formulae and technology for all the products of Annexure 2A, (2) medical X-ray formula corresponding to the latest Ferrania-N product, (3) start-up of production of medical X-ray during 1967 itself, as against the contemplation of the agreement. *viz.*, in the third year after the start of production, (4) establishment of production of medical X-ray for six months free of cost, as contrasted with Article XIX of the Agreement involving payments and (5) advancing the production of roll film on payment of charges.

(*d*) *Bauchet* would not furnish quality samples for the products deleted from Annexure 2 while adopting Annexure 2A. The deleted items were, however, of relatively minor commercial interest.

(*e*) As regards the overall financial viability of Annexure 2A, HPF contended that the total turnover value would be Rs. 843.25 lakhs as against the figure of Rs. 793.45 lakhs visualised in the DPR.

(*f*) Strong technical reasons underlay HPF's insistence on the latest quality of X-ray film and the benefit of securing assistance from *Bauchet* in the establishment of the latest quality X-ray film far outweighed the deletion of certain products of minor commercial importance.

HPF expected to receive the approval of the government very soon after its communication in the latter half of June 1966. However, reminders had to be sent from time to time in order to expedite the government's approval; for delay in the approval might have unfortunate repercussions on the attitude of *Bauchet* towards the modifications and on the production programmes of HPF. The setting up of the plant was almost completed by September 1966 and the production of cine film positive was likely to commence during the last quarter of the year. Immediately, *i.e.*, even before the production started, it would

be necessary for HPF to be definite and final on the product-mix to be pursued; for the very choice between 1960 or 1965 quality was an important aspect in the finalisation of the product-mix. The procuring of the necessary raw materials and the programme of preparing quality samples would be unduly delayed, if the government did not communicate its approval at once.

The government communicated its approval of the proposals early in November 1966; and Annexure 2 A was finalised as follows :

(*a*) Products of which two samples of 300 sq. metres each will be produced, start of production established and technological operation documentation will be supplied :—

Cine-film positive (black and white)	(one grade)
Medical X-ray film	(one grade)

(*b*) Products of which only two samples of 300 sq. meters each will be produced for testing of characteristics and general quality and technological operation documentation will be supplied :—

Roll film	(one grade)
Leica film	(one grade)
Flat (portrait) film	(one grade)
Bromide paper	(three grades)

(*c*) Products of which only technological operation documentation will be supplied :—

Graphic Arts Film (Orthochromatic and non-ortho)
Sound Cine-film
Negative Cine-film
Aero Films for high altitude photography
Chlorobromide papers (four grades)
Document copying papers (by contact and enlargement)
Bromide paper (Two grades)
Colour paper.

Four concluding comments may be made on this study relating to product-mix of HPF.

(*a*) The connotation of the term product-mix is not confined, in this case, to the items of output and the quality of each item; it extends over a wide range of parameters of which some are fairly external to the enterprise. These include (i) the quality of the products on which depend, in part, the mechanical installations and the raw materials, and (ii) priorities in the taking up of the manufacture product by product—priorities in the temporal sense, that is, which products to produce first and which to be deferred and by what interval of time; (iii) classification of the products into those for which samples from the collaborators, should be deemed enough, those for which the start-up of production should be sought, those for which the establishment of production should be insisted upon, and those for which the acquisition of know-how would do. Thus the product-mix problem of HPF is not a simple or single-product and single-solution problem.

(*b*) The formulation of the product-mix had necessarily to proceed within certain parameters external to the management. Involving negotiations with the foreign collaborators, the formulation had to be within the framework of the agreement entered into with the collaborators; moreover, approval from the government was necessary though eventually it was formal in nature, for the finalisation of the product-mix. Thus the determination of the product-mix was not unilaterally easy for HPF; hence the apparently long-winding narrative of the discussions between HPF and *Bauchet* in the study.

(*c*) Revisions in the product-mix tended to be influenced by the market conditions experienced or estimated to encountered by HPF as production commenced. Attempts at a reliable market survey for the different products of HPF were made effectively only as late as 1966-67. A severe decline in the demand for cine positive black —while due to a slump in the film industry,—was no doubt an impressive pointer to the

need for revisions in the output targets of this product and, consequently, in the other lines of production. However, it was only while planning the expansion programmes, late in 1967 that HPF began to be concerned with the repercussions of market conditions on its production programmes. For example, the demand for cine positive, black and white, was expected to be well within two million sq. meters by the end of the fifth plan; and HPF's capacity in this direction would satisfy this requirement. Allowing for an increase of 45 per cent in the current demand for medical X-ray film, the total demand for it in 1971-72 would be within 0.97 million sq. meters, compared with the installed capacity of one million sq. meters; it was only by the end of the fifth plan that this demand might rise to 1.25 million sq. meters, which HPF would have no problem in meeting since an increase in the coating speed, which would be technically feasible, was all that was necessary on its part. The installed capacity in respect of roll films and leica was 0.55 million sq. meters, adequate for the demands at the end of the fourth plan, though it calls for an increase to 0.75 million sq. meters by the end of the fifth plan. Similar estimates of other demands for photographic paper and cine film positive colour are being collected on reliable basis.

The total capacity of HPF stands at 6.15 million sq. meters per annum on the whole. In order to meet the exigencies of the increased demands in certain directions, particularly cine film positive colour, HPF has obtained an industrial licence for an integrated capacity of 8.71 million sq. meters. It is not unlikely that HPF will be faced with the problem of re-allocations of output sizes within the ceiling, among the different possible products depending on the demand conditions.

(*d*) An allied consideration consists of the way in which the product-mix revisions are made by HPF in the light of profit maximisation. Different products yield different net revenues and the substitution of the relatively low net-revenue products by the relatively

high net-revenue products will be in its economic interest. But active output re-allocations on these grounds are bound to be limited by either express or covert considerations of social policies. For example, medical X-ray is in the nature of a necessity for the sick and unhealthy; even cine positive may be considered as a means of mass communication and therefore one of those products whose strength of demand ought not to be exploited for the sake of profit maximisation.

Thus HPF, as a public sector enterprise, will find its product-mix determination complicated from time to time.

APPENDIX 1

PRODUCTION PROGRAMME (DPR)

	Total annual capacity envisaged	Production to be ensured				
		First year 1963	Second year 1964	Third year 1965	Fourth year 1966	Fifth year 1967
				1.M.		
Positive cine film 36 mm	75.000.000	32.000.000	44.000.000	58.000.000	72.000.000	75.000.000
Sound cine film 35 mm	5.000.000	—	—	2.500.000	5.000.000	5.000.000
Duplicate Pos. film 35	1.000.000	—	—	500.000	1.000.000	1.000.000
Negative film 35 mm. 80 to 100 ASA	5.000.000	—	—	2.500.000	5.000.000	5.000.000
Negative film 35 mm. 200 ASA	1.000.000	—	—	500.000	1.000.000	1.000.000
Duplicate negative film 35 mm.	1.000.000	—	—	500.000	1.000.000	1.000.000
Fine grain posit. film 16	20.000.000	—	—	10.000.000	20.000.000	20.000.000
16 mm. inversible film	200.000	—	—	200.000	200.000	200.000
Roll film 6 × 120 in spools	4.000.000	—	—	—	1.800.000	4.000.000
Roll film $4 \times 6\frac{1}{2}$—127	500.000	—	—	—	100.000	500.000
Leica 36 p.	500.000	—	—	—	100.000	500.000
				in m^2		
Radio	500.000	—	—	100.000	300.000	500.000
Portrait film	150.000	—	—	—	—	150.000
				in m^2		
Sizes small spools	1.300.000	—	—	—	200.000	1.300.000

Appendix II

Capital outlays on Plant and Machinery

(As on 31-1-1969)

Item	Lakhs of Rupees	
Film Base		
Collodion	57.45	
Base Casting	138.93	
Substrating	19.31	
		215.69
Emulsion		54.96
Coating		78.41
Conversion		91.66
		440.72
Solvent Recovery		27.31
Scrap Recovery		2.28
		470.31

Appendix III

The manufacturing process consists essentially of the following four stages (see flow chart)

(*i*) The production of substrated cellulose triacetate safety base.

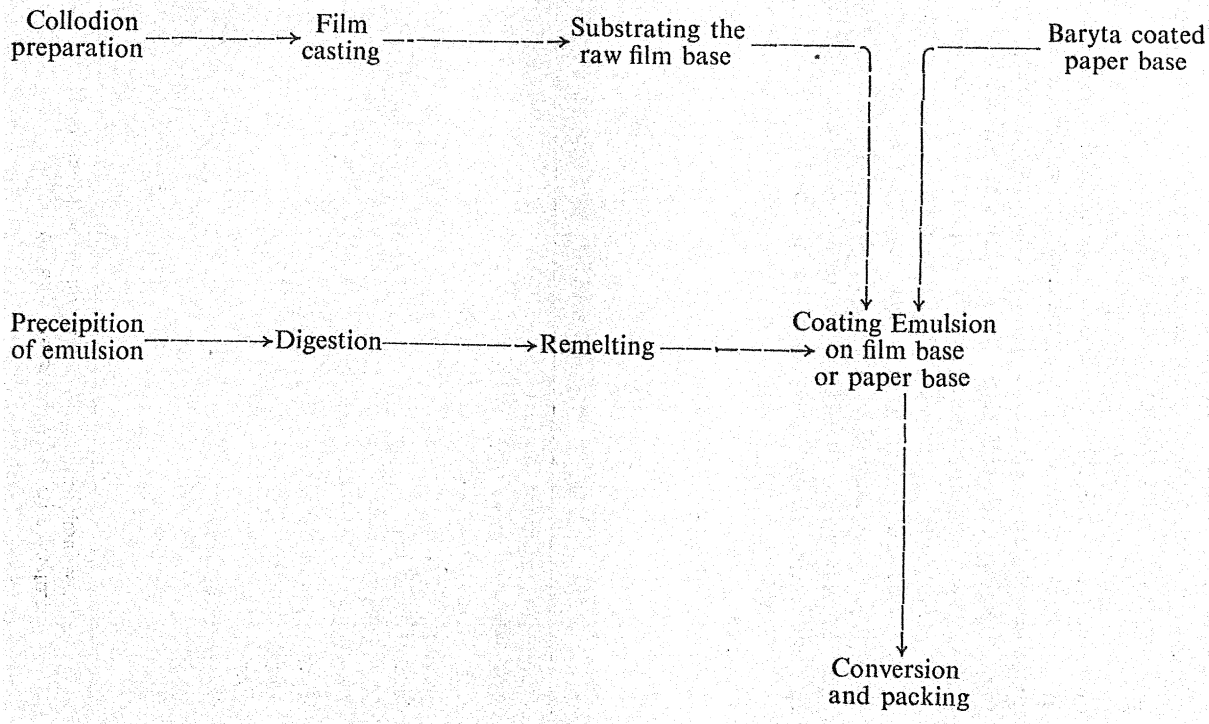
(*ii*) The preparation of photo-sensitised silver halide emulsion.

(*iii*) Coating of the sensitized emulsion on the acetate film base in the case of photographic paper on baryta coated paper.

(*iv*) Converting the coated film or paper (1.14 m wide and about 620 m. long) to the sizes required and packing them.

The first of this, namely, the production of film base consists of casting a thin film of cellulose triacetate with plasticizers from a solution, the solvents being methylene chloride and methanol. The film is cast on to a moving endless stainless steel band and

Flow Chart


Collodion preparation
Film casting
Substrating the raw film base
Baryta coated paper base
Preceipition of emulsion
Digestion
Remelting
Coating Emulsion on film base or paper base
Conversion and packing

is dried and reeled on mandrels. For proper adhesion of emulsion, the surface of the film base is treated with solutions containing solvents, acetone, gelatine, etc. After this treatment, the film is dried and wound on mandrels.

The light sensitive emulsion is composed of minute grains of silver halide suitably sensitized and stabilised and dispersed in a gelatine medium. The preparation of emulsion involves a number of steps such as precipitation, setting, noodling, washing, digesting and remelting. This process is carried out in a four-storeyed building under strictly controlled conditions.

Coating consists of passing the substrated base or baryta paper through a coating trough where the emulsion is pumped; the emulsion is allowed to set on the base/paper, dried under carefullly controlled conditions of temperature and humidity, and the coated material wound on mandrels.

Finally, the coated film or paper reaches the Conversion Department where it is slit, cut, perforated and spooled, as required, and packed before being despatched to the market.

Appendix IV

Sales made by HPF during 1967-68

(in Rupees)

Cine films 35 m.m. type I	49,09,726.05
Cine films 35 m.m. type II	17,92,054.75
Cine films 16 m.m.	3,65,476.32
Leader films	32,621.20
Translite films	58,887.40
X-ray films[1]	13,83,592.30
Casettes[2]	53,001.04
Dark Room Re-fills[2]	3,403.83
Light fogged film	3,651.66
Paper	1,517.28
Triacetate Base	2,970.60
Rolls[2]	2,56,036.04
	88,62,938.57

[1] Raw jumbo imported; conversion etc. was done by HPF.

[2] Imported items—packing was done by HPE.

THE LOCATION OF THE SYNTHETIC DRUGS PROJECT AT HYDERABAD

PROF. LAXMI NARAIN

This case discusses the factors and circumstances which led to the establishment of the Synthetic Drugs Project, one of the three units of the Indian Drugs and Pharmaceuticals Limited, at Hyderabad, the other two units being the Antibiotics Factory at Rishikesh and the Surgical Instruments Factory at Madras. All these units were set up through Russian collaboration. Two other units envisaged to be established along with them—the Phyto-Chemical Plant and the Glandular Product Plant did not come through for various reasons.

The location under study has recently attracted attention because of the view of the Committee on Public Undertakings that "the choice of the location of the Synthetic Drugs Project at Hyderabad was not a happy one....."[1] The Chairman of the Indian Drugs and Pharmaceuticals Limited is also quoted by the committee as saying that "on techno-economic considerations alone, it might have been better to locate the factory elsewhere".[2]

At the request of the Indian Government, a group of Soviet experts visited India in 1956. Their task was to work out recommendations for the development of production of some important drugs in the Second Five Year Plan. This group submitted a report in which it defined the nomenclature and minimum requirements of the important drugs in the country and also pointed out tentatively the units for the production of these drugs in the public sector.

The Government decided in January 1958 to request the Soviet Government for investigating and establishing Drugs

[1]Committee on Public Undertakings (Third Lok Sabha), 22nd Report, Lok Sabha Secretariat, New Delhi, March, 1966, p. 35, para 111.

[2]*Ibid*, para 112.

Projects based on the recommendations of the Russian team, and to depute a second team of experts for estimating the precise foreign exchange requirements and the production programmes for the five projeets, namely, (i) Synthetic Drugs Plant, (ii) Antibiotics Plant, (iii) Surgical Instruments Plant (iv) Phyto Chemical Plant, and (v) Glandular Product Plant. In reply to India's request, a team of eight Russian experts arrived in India on August 2, 1958. The Indian counterpart team consisted of thirteen members.

The leader of the Indian team had stated : "Efforts have been made to get the Soviet team to visit different suitable areas in the country and discuss with the different State Governments with a view to collecting from them first hand indication of suitable sites in each of the States and the facilities obtaining there. The team has already been given a general indication of our intended approach in regard to such projects, i.e., the location of units should be based on the economics of development in suitable areas bearing in mind also the need for dispersal of such units wherever possible". The note went on to say : "The leader of the Soviet team has not, however, been in agreement with our approach. According to him, selection of suitable sites or even broad locations is not within his assignment. The present team was, according to him, expected to discuss only the scope and size of different Projects and to work out broad indications of capital requirements so that, based on this information, the U.S.S.R. and the Indian Government could conclude the necessary agreement for progressing the matter further".

The Russian team, according to this note, had envisaged that, for selecting the sites, a third team of Soviet experts consisting of geologists, engineers, etc. should be invited by the Government of India. This note also mentioned that the leader of the Soviet team was emphatic that the question of location was to be settled by the Government of India in consultation with its experts, but he was prepared to give some broad indications of the aspects to be borne in mind in selecting sites for various projects. It was further stated, "Despite this approach of Soviet experts, every effort has been made to get them to visit at least some of the areas they considered desirable, particularly as during their visit to West Bengal and Kashmir etc., they have already had

opportunities of discussing the suitability of those States for some of the projects with the ministers of those States and it is only fair to give the same opportunity to other States also". In fact, a hurried[3] visit of the leader and four members of the Soviet team was arranged for Madras, Bangalore, and Hyderabad.

The note concluded with the suggestion that it would be "desirable to define in advance the considerations to be borne in mind in the determination of suitable locations".

A copy of this note was sent to the Planning Commission which had prepared its copies for circulation to all the persons who were to attend a meeting of the Planning Commission on October 7, 1958, to consider the offer of the Soviet Drugs Projects.

Locational Considerations Suggested by Russian Experts

The Russian experts who submitted their report on October 14, 1958, stated that in order to select regions and define the sites of location, techno-economic surveys would have to be carried out covering the following points :

(*i*) Proximity to sources of raw materials;
(*ii*) Water, steam and power supply;
(*iii*) Availability of communications;
(*iv*) Availability of labour;
(*v*) Provision for disposal of chemically polluted effluents;
(*vi*) Availability of sample market for sale of manufactured products;
(*vii*) Proximity to research laboratories and other scientific institutions; and
(*viii*) Principles of equal distribution of industrial enterprises throughout the country.

The report of the Russian experts made it clear that the Indian government would have to make the final selection of the region and particular site for construction of each enterprise after taking into consideration the comparative estimates and techno-economic data of the competing regions. The team,

[3]The visit is called "hurried" because the Russian team covered these three places in less than six days.

however, indicated some more specific considerations for choosing the plant sites in addition to the seven general requirements mentioned above. These are shown below for the Synthetic Drugs Project and also for the Antibiotics and the Surgical Instruments Projects for purposes of comparison.

1. *Synthetic Drugs Project*
   (*i*) Proximity to sources of chemical raw materials and intermediates, that is, nearness to plants producing chemicals and intermediates;
   (*ii*) Availability of a vast reservoir (sea) which provides an opportunity to dispose of chemically polluted effluents after treatment, providing thereby its permissible dilution;
   (*iii*) Availability of water of lowest temperature for cooling heat exchanging equipment;
   (*iv*) Closeness to research laboratories and other scientific institutions.

These requirements from the point of view of the Russian team were most fully met by :

"(*a*) the northern part of eastern zone (West Bengal) and
(*b*) the northern part of western zone".

2. *Antibiotics Plant Project*
   (*i*) Availability of pure water in required quantities and of 15° to 18° C;
   (*ii*) Low dust content and humidity of the air;
   (*iii*) Possibility of disposal of biologically polluted effluents
   (*iv*) Proximity to research laboratories and other scientific institutions.

"Basing on preliminary considerations and in accordance with the adopted division by zones on the map of India", the Russian team believed that "the said requirements were most fully met by :

"(*a*) the central part of northern zone and
(*b*) the northern part of central zone of the country".

3. *Surgical Instruments Project*
   (*i*) Availability of skilled cadre of workers, having experience of metal tooling or cutting and home use instruments;

(*ii*) Availability of climate with lowest humidity of air.

"Above-mentioned requirements" according to the Russian Team "more closely approximate in :

" (*a*) Central region of central zone

(*b*) northern part of the southern zone (region of Hyderabad-Bangalore)".

The report of the Soviet Team was considered at a high level meeting of the Planning Commission on November 1, 1958, and it was suggested that for the determination of locations and the ancillary studies, the Planning Commission might set up a team and that the Ministry of Industry would participate in such a team. It was also felt that "in view of competing claims made by different States for each Project, the Planning Commission would be the best agency for recommending the final locations".

Accordingly, the Planning Commission appointed a Committee on January 6, 1959. The Committee was "required to submit its report within about three months of its first meeting"[4].

The Committee consisted of :

1. Shri E. P. Moon, Adviser (Planning), Planning Commission .. Chairman
2. Dr. A. Nagarajarao, Joint Secretary Ministry of Commerce and Industry .. Member

Alternative

Dr. G. P. Kane, Industrial Adviser (Chem.)

3. Dr. K. Venkataraman, Director, National Chemical Laboratory, (C. S. I. R.) .. Member
4. Dr. P. B. Khambatta, Director, Medical Health, Railway Board .. Member
5. Shri K. Vyasulu, Director (Industry) Planning Commission .. Member-Secretary

The Committee was :

(*i*) to make an assessment of the different facilities required for the establishment and operation of each project

[4]The first meeting of the Committee was held on January 13, 1959

and examine the availability of these facilities at the various locations, considered appropriate.

(*ii*) to make recommendations in respect of complementary investments for the creation of the required facilities at the selected locations.

(*iii*) to enumerate the different items on which site data were required to be made available for the consultants for the preparation of project reports and suggest arrangements for their collection.

(*iv*) to make a reassessment of the capital and cost estimates with reference to the locations recommended for the various projects.

About the time when the Russian offer of the Drug Plants was being processed, the Government had almost finalised a deal to establish a Basic Chemicals and Intermediate (BCI) Plant with the collaboration of the Bayers Consortium of West Germany. The Russian Team had stressed the need for single location for both the B C I Project and the Synthetic Drugs Projects, because it, among others, had envisaged the advantages of (*a*) common service facilities, (*b*) elimination of transport requirements for some of the intermediates to be produced at the B C I Project, for consumption by the Synthetic Drugs Project, and (*c*) the possibility of establishing relatively larger sized plants for inorganic chemicals than would be possible if the two units were developed at separate locations.

The Drug Projects Location Committee while recognising the advantages of a single location felt "that weight must also be given to certain other considerations". In the Committee's view, the manufacture of synthetic drugs in other countries was by no means invariably linked with the manufacture of intermediates and the establishment of these two Projects at two separate locations, though it might entail "some additional cost, would promote a wider dispersal of industrial development". The Committee did not specify all the additional costs involved in separating the locations of these two Projects. The Committee admitted that an exact assessment of the situation could only be made "if detailed project reports are prepared on the basis of the two alternatives". The Committee, however, added that the establishment of a single location of these two projects

might "in practice be fraught with some difficulties when the technical experts, who are to assist in their implementation are drawn from two foreign countries with conflicting political and economic ideology". The Committee also alluded to the experience in the matter of providing common service facilities for projects technically assisted by different foreign agencies, which has not been altogether happy". The Committee, therefore, favoured the establishment of these two projects at different sites.

The Committee visited "all sites which were competing for the location of any Project before the recommendations were finalised, except in the case of Surgical Instruments Project", the reasons for which were not specified.

In deciding the location of the Synthetic Drugs Project, the Committee considered many areas which were commended for scrutiny by the State Governments, and also the Alwaye location which was considered by the Committee "on its own initiative" because there was no reply from the Kerala Government to the letter of the Committee asking for its proposals for the establishment of the Project. The locations studied in detail were (*i*) Durgapur (West Bengal), (*ii*) Guindy and (*iii*) Minjur (Madras), (*iv*) Sanatnagar (Andhra Pradesh), (*v*) Alwaye (Kerala), and (*vi*) Mogalsarai (U.P.)

The Committee considered the following factors in choosing the location.

It was felt that as the demand for the power was only 2,000 KW there would be no difficulty about it at any of the above locations. The Committee thought that the differences in tariff were only marginal, and it did not attach much weight to it.

The Committee proposed to assess the situation with reference to the quantity of water available, its rate, the ground water temperature, and situation of the source of supply. It was estimated that 2.76 million gallons of water per day would be required. The Committee found that Alwaye, Sanatnagar and Mogalsarai had abundant supplies of water to meet this demand. In regard to other places too, the Committee did not envisage much difficulty in the water supply.

As regards the rates for water, the Committee recorded : "The assurance of free supplies have been given at Mogalsarai; in the course of the discussions which the Member-Secretary had with the officials at Alwaye and Sanatnagar, it appeared that the same terms can be had at these two locations also". The Committee noted that the Sanatnagar location was 4 miles from the source of water supply, as against the Mogalsarai site, which was about 2.5 miles. The Alwaye location was both adjacent to the river and was rated as the best by the Committee from the point of view of investment requirements for arranging water supplies to the proposed Project.

In the Committee's view, the ground water temperature was a major consideration as it was to determine the extent of chilling facilities to be provided to secure the optimum water temperature of 18°C recommended for this Project. Based on the following data, the Committee concluded that the difference as amongst all locations except Durgapur, where the maximum water temperature was fairly high, were to be regarded as marginal.

GROUND WATER TEMPERATURE

	Maximum	Minimum	Average
Durgapur	38.9° C	12.6° C	26.3° C
Guindy & Minjur	NA	NA	NA
Alwaye	30 0° C	20.0° C	24.0° C
Sanatnagar	31.0° C	27.5° C	29.0° C
Mogalsarai	32.0° C	7.0° C	—

On this point the Committee said : "The volume of effluents requiring disposal is just about 3.3 lakhs gallons per day compared to 6-7 million gallons in the case of B.C.I. Project. Further, pre-treatment of effluents has also been envisaged under the project by providing, *inter alia,* a station for neutralisation of acidulous effluents. The quantity of effluents requiring such pre-treatment is only a third of the total volume. In the circumstances, while developed arrangements for disposal of effluents as at Durgapur would definitely

be advantageous, they need not be regarded as crucial for deciding the location of this Project. The effluent disposal arrangements outside the perimeter of the plant will in this case be reduced to the provision of a small channel for leading the pre-treated effluents into a nearby river. The effort or the investment involved would not be large. As things stand, Durgapur and Alwaye can be said to the rather better off than the others in this matter, the former on account of the Tamla Nalla and the latter on account of the closeness of the site to the Periyar river, a vast reservoir of water. At Sanatnagar, the pre-treated effluents would have to be channelled into the Musi river".

The Committee attached great significance to technological research in the field of synthetic drugs. Some of the members of the Committee were of the view that for this Project "greater weight should be given to the proximity of the plant site to research laboratories than to any other locational factor barring the requirements relating to water supply". The reason given for this was that "the erosion of capital investment due to obsolescence of processes and products cannot be provided against adequately, unless there is effective and intimate liaison between those in charge of the plant and centres of research". Viewed against this requirement, the Committee felt that there was not much point in further examination of the sites of Ganjum, Pamposh, Adityapur, Sindri, Naini, Champa, and Itarsi, which had also been suggested by various state Governments.

Weighing the advantage of other suggested locations from this standpoint, the Committee found : "From the Durgapur location, Calcutta, the nearest centre of research for the pharmaceutical and chemical industries is about 100 miles distant. The position is the same in regard to the Alwaye sites which are far away from the University research centre at Trivandrum. The Madras locations are very much better off in this respect and Sanatnagar is on an almost equal footing being close to the Regional Research Laboratory of CSIR, and the research departments of the Osmania University. The Mogalsarai location can be ranked next on the basis of its proximity to the Banaras Hindu University which has a pharmaceutical department".

The railway ton-mile movement of transport of raw materials and fuels to the plant site from the nearest source

of supply was worked out in detail by the Committee and summarised as follows :

TON-MILE MOVEMENT (RAILWAY) OF RAW MATERIALS & FUEL

Location	Raw materials other than fuel	Fuel	Total
	(Millions of ton-miles)		
Durgapur	6.75	0.80 (*a*)	7.55
Alwaye	6.47	(*b*)	6.47
Sanatnagar	5.40	7.20 (*a*)	12.60
Mogalsarai	7.37	4.50 (*c*)	11.87
Madras (Guindy)	5.90	3.40 (*d*)	9.30

(*a*) Coal.
(*b*) Furnace oil assumed to be moved by road.
(*c*) Furnace oil from Barauni Refinery.
(*d*) Lignite tar from Neyveli.

Based on the above, the Committee found that Alwaye was the best site from the point of view of ton-mile movement on the assumption that furnace oil was used as fuel in place of coal. But it added that the use of furnace oil would put up the cost of operation. With reference to other locations, the Committee was not clear about the fuel requirements. The Russian experts' report had suggested the capacity requirements as 40 tons of steam per hour. The actual consumption of steam was envisaged to vary between 30 and 40 tons per hour when the plant was under peak production. The coal equivalent of this requirement on the assumption (*a*) that the plant works on a continuous basis, (*b*) that the B.T.U. per pound of the coal is 10,000 (*c*) that the boiler efficiency would be 75 per cent, was measured as 40,000 to 60,000 tons per year. The Committee felt that the derived figures of coal requirements would be on the higher side, if the projected plant output could be secured on the basis of operations extending to less than 24 hours per

day. For the purposes of calculations, the Committee assumed the coal requirements at 40,000 tons per year. However, while considering the fuel consumption factor for deciding the location, the Committee felt that it was not "on very firm ground regarding the coal requirements", since the figure of 40,000 tons had been indirectly derived and appeared to be "very high". It added : "If coal is excluded and only the ton-mile movement of other raw materials is taken into account, then Sanatnagar would stand first followed by Alwaye and Durgapur; Mogalsarai would lag behind considerably".

As regards the incidence of freight cost, the Committee found that the margin between Sanatnagar and Durgapur was not significant. For the Alwaye location, not only the freight charges were considered higher on account of the road transport to the plant site involved, but also the fuel costs in view of the assumption made about the use of furnace oil. Fuel cost at Madras was also considered higher on the basis of expectations of the selling price of Neyveli tar, or coal from far-off Singareni.

The ton-mile movement of the 863 tons of finished goods per annum was not considered significant from the point of view of location. The Committee thought that the incidence of freight cost on the finished products as well as the magnitude of ton-mile movement was not expected to show material variations as between various locations in relation to the centres of consumption. This factor, therefore, in the view of the Committee, was not to weigh seriously in the overall decision.

Regarding site conditions, the Committee gave much significance to ambient temperature and the relative humidity at the various suggested sites which were as under :

	Ambient temperature			Relative Humidity (%)		
	Max.	Min.	Aver.	Max.	Min.	Aver.
Durgapur	117° F	41° F	78.2° F	90	13	62
Mogalsarai	118° F	35° F	76.5° F	87	35	76.5
Minjur-Guindy	109° F	63° F	85° F	76	67	—
Sanatnagar	112° F	46° F	74° F	83	27	55
Alwaye	89° F	73° F	81° F	95	45	80

The Committee attached "much value" to a dry climate and low ambient temperature which provide healthy conditions for work as well as contribute to the keeping quality of drugs. As between these two factors, greater weight was given to a dry climate with low humidity. The Committee recognised the superiority of Sanatnagar on both these two counts. It added that apart from higher ambient temperature and humidity conditions, Durgapur and Mogalsarai would suffer from a dusty climate.

With reference to other site selection factors, the Committee found the conditions nearly equal at all the locations examined with the exception of Alwaye, where land values were comparatively high. The Sanatnagar location, the Committee thought had "the advantage that private residential accommodation is likely to be available in Hyderabad City". This possibility, in view of the committee, "of reducing investment on a township were probably not existing at most other locations". With regard to other locations, the Committee had this to say : "Minjur location suffers from the disadvantage of a break of gauge if the project is to be based on using lignite tar from Neyveli for steam-raising purposes and from long distance haulage of coal, if it is to be coal-based. The Guindy site is more attactive and would have been explored further by the Committee, if there had been a reasonable prospect of obtaining adequate water supplies".

In the light of the foregoing analysis of the facilities and possibilities, the Committee recommended that "the Synthetic Drugs Project be located near Sanatnagar in Andhra Pradesh". As the second best location in order of ranking, the Committee bracketed the Durgapur and Alwaye sites.

The Committee also recommended to the Planning Commission and to the Government to establish regional processing plants of a given minimum economic size to produce finished drugs based on the drugs manufactured in bulk by the Synthetic Drugs Plant. Such a step, in view of the Committee, "would go a long way towards meeting legitimate aspirations of the different regions for a share of the benefits of industries which are being established by the Government".

After the Projects Location Committee submitted its report to the Planning Commission on September 1, 1959, the Planning

Commission sent a note to the Ministry of Commerce and Industry stating that the recommendations of the Committee, "though not brought up before the formal meeting have been accepted by the Planning Commission". It was assumed that the Ministry of Commerce and Industry would take further action on the recommendations. It also emphasised "the need for a very early action" because until the States concerned were informed of the choice of locations, detailed studies of the sites could not be undertaken and these had to be completed very soon, before the arrival of the Russian experts.

After the Planning Commission concurred with the recommendations of the Location Committee, the recommendations were considered by the Government in the last week of November. 1959. While considering the recommendations, the following facts were kept in view.

(1) That an agreement was signed at Moscow on May 29, 1959, between the Government of India and USSR for cooperation in establishing the five Drug Projects. (2) That in pursuance of this agreement, a contract was entered into between the Government of India and Messrs. Techno-Expert of Moscow on September 5, 1959 "to render technical assistance in selecting construction sites and collecting initial data for designing the Projects referred to above", and that some of the Soviet experts had arrived in India in pursuance of that agreement.

The Government "approved provisionally" the proposed location in the second week of December 1969, but desired that the final selection of the sites should be determined in consultation with the foreign experts.

The Ministry of Commerce and Industry informed the Government of Andhra Pradesh over the telephone, about the decision. The State Government was also informed that the final selection of the exact site would be determined in consultation with the Soviet experts who were expected to visit Hyderabad "shortly".

In a letter confirming the telephonic conversation, it was stated that questions such as provision of land, free of cost and charges etc., water supply, electric supply, and other allied matters could be gone into later on. A copy of the questionnaire for the collection of initial data necessary for site selection was enclosed with a request that the same

might be collected immediately before the Soviet experts reached Sanatnagar.

The Ministry of Commerce and Industry ascertained over the telephone from the Government of Andhra Pradesh, a week later, that the latter had initiated action regarding notification for acquisition of land. The State Government had also assured that there was no danger of the prices of the land shooting up as a result of the announcement of the provisional location of the Drug Project.

The decision of locating various Drug Plants was also laid on the table of the Lok Sabha on December 22, 1959.

Some perspective to the decision about the location of the Drug Projects is provided by the claims of the State Governments for getting the various Projects. These claims started coming up first during September—October 1958, when the Russian experts were visiting various States, and were followed up till the Government decision in the matter was known. The more important of these claims are given below.

In October 1958, the Secretary (Industries), Andhra Pradesh, wrote to the Ministry of Commerce and Industry referring to the visit of Soviet experts to the State capital. He enclosed some data "in support of the claim to establish an Antibiotics and Surgical Instruments Factory at Hyderabad". It was considered "evident" on the basis of the data furnished that Hyderabad would be "very suitable" for location of these units, and the Centre was requested to consider "favourably" the location of these units at Hyderabad. He promised to supply any further information needed expeditiously. The enclosed note pointed out how, judged from the point of view of availability of industrial building, land, labour, power, water, disposal of chemically polluted effluents, steam, transport and raw material, Hyderabad was "ideally suited" for the purpose in view. Regarding effluent disposal, for instance, the note stated : "This is very easy and offers no problem as miles and miles of open uninhibitated area is available adjoining Sanatnagar industrial area".

In this letter, there was no reference to Synthetic Drugs Project as such, probably because the State Government was not clear which of the five Drug Projects was liekely to come to it or suited it most.

On January 22, 1959, another letter was written to the Secretary, Ministry of Commerce and Industry, referring to the report of the Russian Team that Hyderabad-Bangalore region had been recommended by it as one of the areas suitable for the location of the factory for the manufacture of surgical instruments. In this letter, a special request was made for the location of a plant for the manufacture of Surgical Instruments at Hyderabad. The claim for Hyderabad was supported on the ground that Bangalore already had a large number of centrally sponsored public sector units. The letter stated further, "This State has all along not made any headway in industrial development, due to unequal diffusion of industries among different regions of the country. Though the Government of Andhra had represented to the Government of India many times in the past that some of the major industrial projects sponsored by the Centre should be located in Andhra, this State had not so far the benefit of any new industrial project of importance in the public sector. The location of at least the two Drug Projects, referred to above, in Andhra Pradesh will to a certain extent set right the marked regional imbalance".

A copy of this letter was sent to the Member-Secretary of the Location Committee, and the State Government was informed to contact the Planning Commission in that regard.

On July 9, 1959, the Government of Andhra Pradesh informed the Ministry of Commerce and Industry, that the Location Committee had submitted its report and that Andhra Pradesh was industrially backward and they were anxious that some of these units should be set up there. After enumerating factors favouring location in Andhra Pradesh it was mentioned, "We would readily provide for these Projects the necessary land, power and water supply and we would make these available at cost; so far as land is concerned, we would even be prepared to examine the question of assuming a portion or all of financial liability. This is only an index of our desire to have some of these projects located in Andhra Pradesh".

In reply, it was stated that the recommendations of the Location Committee had not been received by the Ministry and that various aspects mentioned in the letter would be fully borne in mind. Copies of the reply and the original letter were sent to the Member-Secretary of the Location Committee.

On July 23, 1959, the Government of Andhra Pradesh acknowledged the reply mentioning their readiness to supply any further information needed for the purpose. It was also mentioned that the Andhra Pradesh Government was going ahead with the scheme of barrage on the Manjeera river.

In December 1958, the Punjab Government wrote to the Ministry of Commerce and Industry that the Punjab was most suited for the establishment of various projects which the Government of India had in mind. In August 1959, the Chief Minister of Punjab wrote to the Minister of Commerce and Industry, that in the field of small industry, people of Punjab had made some little progress but for a balanced development of economy of the State, it was necessary to have some large-scale units. He thanked the Minister of Commerce and Industry for locating the Fertiliser Factory at Nangal and added : "We hear from time to time of projects which are being developed in other parts of the country and I am, therefore, writing to you today to request you to consider specially the case of the Punjab for the location of some significant large-scale units in the public sector in the near future". He said that he would be grateful, if Punjab was given at least one of the five proposed factories. He promised necessary facilities in respect of water supply and power.

This letter was followed up by letters from two influential Members of Parliament from Punjab, one of whom was a former Union Cabinet Minister. The Minister of Industries of the State also wrote to the Minister of Commerce and Industry, about the claim of his State.

In November 1959, the Union Minister of Industry replied stating that the Planning Commission had appointed a Committee to go into the question and added that he would let him know as soon as the decision was taken.

The Maharashtra Government wrote to the Ministry of Commerce and Industry, in October 1958, indicating the suitability of establishing various Drug Projects in Bombay. The Chief Minister of the State wrote to the Prime Minister in May 1959, that he had reason to believe that West Bengal Government was likely to press its claim for Durgapur for the BCI Project. He stated that except the Hindustan Antibiotics at Pimpri, no major project in the public sector had been

established in Maharashtra. He wanted to correct the impression that his State had a large number of industries by pointing out that these were only located in just two or three cities while vast areas were bereft of any such benefits. He added that Durgapur had got a Steel Works. a Coal Machinery Plant, Optical Glass Project, in addition to a large A.C.C. Vickers (Babcock Project) in the private sector. His State, he added, was endowed with natural advantages only in few respects and, if they were not to use those, the chances of his State getting any major industries would be remote. He suggested that, over and above the technical considerations, the aspirations of his State might also receive due weight.

In reply, the Prime Minister wrote to the Chief Minister that he was writing in the matter to the Minister of Commerce and Industry, and added that, so far as he was concerned he thought that, other things being equal, preference should be given to the South for the establishment of any such industry. He added that normally a Committee of experts was appointed which recommended places and to some extent they had to go by their advice.

The Prime Minister wrote to the Minister of Commerce and Industry, enclosing a copy of the Chief Minister's letter, stating that it was not good concentrating on major projects at Durgapur and that the South should be given preference, "if at all possible".

The letter of the Chief Minister along with that of the Prime Minister and the reply thereto were brought to the notice of the Location Committee.

The Government of Madras, wrote to the Ministry of Commerce and Industry in October 1958, referring to a letter from the Director of Industries, Madras, which contained information of possible locations in the Madras State for the establishment of Drug Projects. The letter was supplemented by a note giving detailed information in that regard.

In May 1959, the Minister of Industries, Madras, wrote to the Minister of Commerce and Industry, that there was scope in his State for the establishment of Antibiotics, Phyto-Chemical, Surgical Instruments and BCI Projects. He added : "We have several times brought to the notice of the Union Government the feeling which has rightly or wrongly grown in this

part of the country and which has been carefully nurtured by the opposition parties that the Centre has deliberately neglected the southern region, particularly the Madras State in the matter of balanced regional distribution of industries. Putting in new industries in areas, where there have been very heavy public and private investment will cause dissatisfaction among the people of States like Madras and will render the ultimate emotional integration of the nation difficult". He wanted four Projects, namely, Antibiotics, Phyto-Chemical, Surgical Instruments and BCI, to be located in the Madras State.

This communication was replied to by the Union Industry Minister stating that a committee had been set up by the Planning Commission and that it would visit Madras soon. He expressed the hope that the Madras Government would have full opportunity to place its views before the Committee. A copy of the letter was sent to the Chairman of the Location Committee.

In September 1958, the Government of U.P., wrote to the Ministry of Commerce and Industry, that they had been informed that the Russian expert team would visit only the Central Drugs Research Institute, Lucknow and no other programme was to be arranged for it, and that no steps need be taken to canvass the case for the location of the Drug Projects in U.P. with the Russian experts. The State Government pointed out that "it was obvious to the State that they could not give any impression to the foreign experts that there was any kind of rivalry or competition between the States". They expressed the hope that until the case for U.P. was examined by the Government of India, it will keep its mind open about the location of units and an opportunity would be given to them to go over to Delhi for discussions. They further stated : "U. P. has not so far been favoured with the location of any of the major enterprises undertaken by Government in the public sector. Compared to some of the highly industrial states like West Bengal and Bombay, U.P. cannot claim to be in a position to make out a case on technical and economic grounds. In effect this would mean that this State will have to remain content with its existing regional backwardness. I am sure the Government of India, who share the responsibility of developing this industrially backward area equally with the State Government, cannot look upon the situation with approval and equanimity".

The choice of Hyderabad location attracted attention and some criticism[5] due to the difficulty in the disposal of effluents of the Synthetic Drugs Project. It was for this reason that in early 1960, the Union Minister of Industry had suggested that Visakhapatnam may be considered as a feasible location for the Project. But the Andhra Government while "appreciating the advantages of location at Visakhapatnam" pointed out a "serious drawback, namely of water supply". The State Government added that any scheme for supplying the large quantities of water required by the Project would entail heavy capital expenditure, and therefore Visakhapatnam was not considered suitable for the Project.

In May 1961, the Union Industry Minister wrote to the Chief Minister of Andhra Pradesh that he was glad to know from him again on his visit to Hyderabad that the State Cabinet had agreed to make the necessary arrangements at its cost for the disposal of effuents. He wanted a confirmation of this assurance.

After ten days, the Chief Minister in his reply stated that it was not correct to say that they had agreed to bear the cost of arrangements for effluent disposal. Their Cabinet had not considered that question and it was what he told the Union Industry Minister during the latter's visit to Hyderabad. He promised to write to him as soon as they arrived at a decision.

Before the reply from the State was received, the Union Industry Minister wrote to the Chief Minister again : "As regards effluent treatment, the matter has taken a hopeful turn The Russian experts have practically rejected the scheme of carrying the effluents through a 12 mile long pipe line from Sanatnagar to city sewerage works on the Musi river, then pumping them into a series of lagoons where they would remain stored for nine months before they are pumped into the Musi river during floods. The Russians have suggested a simpler scheme of having two tanks, 300 meter × 500 meter × 5 meter in the vicinity of the plant, about a mile from it and pumping effluents after biological treatment through a pipe line. The two tanks are to be used alternatively for a period of 10 years each. When

[5] *See*, The Committee on Public Undertaking (Third Lok Sabha), 22nd Report.

one tank becomes full, the other will be taken up and in the meantime the liquid effluents of the first will get dried up through evaporation". The cost of this scheme was worked out at Rs. 15 lakhs as against the "conservative" estimate of Rs. 40 lakhs of the first. The Minister expressed the hope that the Andhra Government would have no objection in accepting the responsibility for the new scheme of effluent disposal which was simpler and more effective than the first and yet not even half as expensive.

The Union Industry Minister reminded the Chief Minister about a month later asking for his approval of the Rs. 15 lakhs scheme of effluent disposal. A fortnight later the Chief Minister wrote back saying that his Government agreed "to bear the full cost of the effluent disposal scheme".

The Rs. 15 lakh scheme was not considered desirable by the Central Public Health Engineering Research Institute, Nagpur and was therefore dropped. And after prolonged investigations, a scheme of effluent disposal costing about Rs. 60 lakhs was decided upon finally.

As Andhra Pradesh Government was to bear the cost of effluent disposal, the Chairman and Managing Director of the Indian Drugs and Pharmaceuticals Limited after a meeting with the Andhra Pradesh Minister of Finance and Industries, wrote to him in June 1965 that as already requested verbally, he would be most grateful for his good offices in obtaining a very early clearance of the scheme and of the estimate for the first phase of the construction of effluent disposal involving Rs. 25.84 lakhs. It is now understood that the cost of the effluent disposal plant has come to Rs. 60 lakhs. This is, in addition to the recurring expenditure of running the plant. It is understood that the State Government agreed to pay the total cost of effluent disposal, as it was on the behest of the State Government, that the project was located at Hyderabad and not at the seashore. But so far (till June 1972) the Government has not compensated the enterprise for the cost incurred in this regard[6]

[6]Plant erection started in early 1965 and it went into production in November, 1967. The total cost of the plant has amounted to Rs. 22 crores.

BANK FINANCE TO SMALL SCALE INDUSTRY : TWO CASE STUDIES

Dr. S. P. VIJAYASARADHI
&
Prof. K. T. RAMAKRISHNA

These two case studies deal with the manner in which a leading commercial bank in the city of Hyderabad financed two small-scale units producing metal furniture in the city. In the case of both the units, the investment of capital in plant and machinery including the capitalised value of rented premises but excluding the amount spent on housing and amenities for workers is not in excess of Rs. 7.5 lakhs which is the limit set for capital assets for small-scale industry in India.[1] The period under review is since 1964.

Since the units as well as the bank prefer to be anonymous, we may call them, Messrs. *Utility Metal Works,* Messrs. *Hind Furniture and Appliances* and *The Ideal Commercial Bank Ltd.,* respectively.

1. Messrs. Utility Metal Works

Messrs. *Utility Metal Works* was started in October 1965 as a partnership concern to make aluminium furniture in the first instance to be followed up later with the manufacture of steel furniture and hospital equipment. The two financing partners, Mr. Deendayal and Mr. Ramdayal were to invest a capital sum of Rs. 40,000 for the purposes of the firm's business with the right to be consulted on all the business matters of the firm as well as the right to supervise its business, while Mr. Premdayal was to act as a working partner and devote all his time to the management of the business. The firm's profits and losses were to be shared by the three partners in this manner; Mr. Deendayal — 35%; Mr. Ramdayal — 30%; and Mr. Premdayal — 35 %.

While all the partners were entitled to draw Rs. 4,000 per annum in anticipation of profits, Deendayal and Ramdayal,

[1]Prior to the devaluation of the Indian Rupee in June 1966, the limit was Rs. 5 lakhs.

the financing partners were also entitled to earn interest on their capital investment at 9 per cent per annum. Premdayal had been previously employed for over ten years in the costing department of *Suraj Metal Works Ltd.*, a large-scale metal furniture manufacturer in the city and as such had gained considerable experience in the techniques of purchasing, marketing, costing and budgeting.

The firm was registered as a small-scale industry with the Director of Commerce and Industries, Andhra Pradesh to take advantage of raw material quotas at controlled prices, factory space in the industrial estate, technical guidance from the Small Industries Service Institute and marketing channels through the National Small Industries Corporation.

Immediately after the formation of the concern, Premdayal applied to one of the local industrial estates[2] in the city for the allotment of a unit to house the proposed factory. By locating his unit in the industrial estate, he hoped to command many common facilities available there, such as those of the General Engineering Servicing Centre, and Raw Material Service Centre. Moreover, he would have the facility of purchasing the requisite machinery and equipment on hire-purchase basis through the National Small Industries Corporation and could get liberal financial assistance from the banks and the State Financial Corporation. Since the estate was provided with an assured water supply from the City Water Works Department, and the State Electricity Department had made necessary arrangements for supplying power to the units located in the Estate, he also hoped that there would be no time-lag in obtaining these essential services to commence production in time. In November, the concern was allotted an 'F' type factory unit comprising a plinth area of 1281 square feet for workshop and 327 square feet for office at an annual rental of Rs. 1,512 with an option to own it eventually on hire-purchase basis. The concern planned to employ about two dozen workers, ten of whom were to be skilled and the rest un-skilled.

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[2]An Industrial Estate is "a developed and planned area with properly designed factory buildings of different sizes available on reasonable rent to small-scale units with necessary amenities such as roads, water-supply, power-connections and other common facilities.

Aluminium furniture was a recent innovation and had just come into the market. Because of its relatively high price, it was, however, likely to be patronised by the upper income-groups of the population in the initial years of its introduction. Nevertheless, as it combined the features of durability, easy portability, light weight and elegant appearance, it was bound to capture with considerable sales effort, in due course, a more extensive market covering the middle-income groups too.

The level of production had to be determined on the basis of the future sales projection for aluminium furniture which the unit proposed to manufacture. Aluminium furniture being a new product required heavy expenditure on sales promotion, if it had to be marketed throughout the State. So in order to attain sizeable initial turnover with less marketing expenditure, Premdayal wanted to confine the promotion of his product only to the city in the first instance. He had an additional reason for this since the fashionable and the rich elite who were likely to buy aluminium furniture were concentrated in the city. He realised that he had to create and develop a sustained market for the product in the city in the face of severe competition from steel furniture which was relatively low-priced. Premdayal was convinced that, with the inflationary trend in income, the tastes of middle income group consumers would change in course of time and demand for his product would increase; this would also lead to a possible lowering of the price of the product as his unit gradually achieved the economies of scale. So, at least for the first five years, he wanted to confine his sales to the city only. He wanted to use the total monthly sales of steel furniture in the city as a base to project the unit's share of the city market for aluminium furniture in the face of competition from steel furniture. He estimated the total monthly sales of steel furniture in the city at Rs. 5,00,000 of which *Suraj Metal Works Ltd.,* and *Bombay Metal Furniture Company Ltd.,* the two leading manufacturers in the line accounted for 25 per cent and 30 per cent of the city market respectively and *Bright Steel Furniture Company,* a newly started concern in the city accounted for 10 per cent of the city market. Initially, Premdayal hoped to capture 5 per cent of the city market which came to about Rs. 25,000 sales a month and 10 per cent of the market within a period of two years. Thus, initially the unit had planned for

a production of Rs. 25,000 sales value, covering three items of manufacture, as shown in Table 1.

TABLE 1

DAILY PRODUCTION SCHEDULE

Item of manufacture	No.	Sales value of each item	Total value
		Rs.	Rs.
1. Aluminium Chairs	8	70	560
2. Aluminium Tables	2	120	240
3. Aluminium Sofa-cum-bed	1	200	200
			1,000

Value of monthly production : Rs. 1,000 × 25 (working days) = Rs. 25,000.

The Management set about estimating the unit's fixed and working capital needs required for an installed capacity of Rs. 50,000 production a month. The fixed asset requirements were estimated at Rs. 40,000 : machinery. Rs. 35,000; tools, Rs. 1,000; electric installations, Rs. 2,000; and furniture, Rs. 2,000.

Working capital is defined here as the sum of current assets, *viz.*, cash, raw material and finished goods stocks and work in process and debtors. As a first step in the determination of the amount of working capital, the cost of production of the estimated monthly sales of Rs. 25,000 was estimated at Rs. 22,000, comprising cost of raw materials, Rs. 14,000 and other costs, Rs. 8,000. The amount of working capital needed for an annual production of Rs. 3,00,000 i.e. Rs. 25,000 × 12 months was based on the cost of raw material stocks required, the value of work-in-process and the value of finished goods stocks required for the planned sales, and cash to cover other expenses (Table 2).

TABLE 2

WORKING CAPITAL

		Rs.
(*i*) Raw materials—3 months' production requirements, Rs. 14,000 × 3	..	42,000
(*ii*) Work-in-process—one day's production	..	1,000
(*iii*) Finished goods—one week sales Rs. 1,000 × 6	..	6,000
(*iv*) Cash to cover one month's expenses	..	8,000
TOTAL	..	57,000

Premdayal came to know that *The Ideal Commercial Bank* in the city was granting instalment credit loans, repayable over a period not exceeding five years to small-scale units for obtaining movable equipment, plant and machinery, new or used if such plant or equipment was in a reasonably good working condition. All that he had to do in order to obtain the loan was to make a down payment of 20 to 25 per cent of the cost of plant and equipment to be purchased, furnish a third party guarantee and pledge to the bank the plant and equipment to be purchased and, if necessary, the other unencumbered assets of the unit. He could also hope to get the following types of advances under the head 'Small industries Loan' to meet his unit's working capital requirements.

Cash Credits—'Lock and Key' and 'open' types

These were advances made by the bank particularly to units where the process of converting raw materials into finished products was elaborate, involving a considerable time gap. The advances were secured against raw materials and finished goods—and in the case of 'open ' type of cash credit against stock-in-process too. The unit might draw up to 73 per cent of the raw materials and 60 per cent of the finished goods so pledged to the bank, subject to the maximum drawing limit set by it. Under the 'lock and key' type of cash credit, all raw materials not immediately required for processing purposes and all finished goods not for immediate sale could be kept under the bank's lock. Under the 'open type' of cash credit,

raw materials needed constantly for processing and stock-in-process could be stored in the godowns which bore only the bank's name board but one key of which would be entrusted to the borrower. Under both the types of cash credit, advances were available against the pledge of finished goods, depending upon their marketability as well as the technical performance of the unit. Premdayal thought that both the types of cash credit would give him the advantage of turning a limited amount of working capital over and over again.

Advances against bills covering sale of goods

Advances were made by the bank normally up to 90 per cent of the invoice value of the goods sold on credit, provided such invoices along with railway or lorry receipts were submitted to the bank. In the case of supplies of goods to Government departments, the unit had to execute a power of attorney in favour of the bank to enable it to collect bills drawn on such government departments. These advances were meant to help speed up the working capital turnover.

In November 1965, Premdayal applied to the bank for an Investment Credit of Rs. 25,000 for the purchase of plant and machinery, costing Rs. 25,000 and a small-scale industries loan of Rs. 60,000 (Table 3) to meet the unit's working capital requirements.

TABLE 3

DETAILS OF REQUEST FOR LOAN

	Rs.
(*i*) Advance against the pledge of stocks of raw materials and finished goods limited to open type Rs. 25,000 and lock and key Rs. 20,000. ..	45,000
(*ii*) Advance against bills covering sale of goods limited to ..	10,000
(*iii*) Advance by way of discounting trade bills limited to ..	5,000

TABLE 4

PRO FORMA BALANCE SHEET : 31ST OCTOBER, 1966

Liabilities		Rs.	*Assets*		Rs.
Capital	40,000		*Fixed Assets :*		
Add profits	30,000		Machinery, Tools, Dyes Furniture, Electric Installations	40,000	
	70,000				
Less drawings	12,000	58,000	Less depreciation	4,000	36,000
Loan from bank :			*Current Assets :*		
Instalment Credit	25,000		Advances	2,500	
Cash Credit	13,000	38,000	Deposits	3,500	
			Debtors	10,000	
Creditors for materials supplied		10,000	Inventories	52,000	
			Cash	2,000	70,000
		1,06,000			1,06,000

He submitted a *pro-forma* balance sheet (Table 4) and *pro forma* profit and loss statement[3] (Table 5) along with the applications for instalment credit to present the financial position and operating results of the unit forcast for the year 1966.[4]

TABLE 5

PRO FORMA PROFIT AND LOSS STATEMENT FOR TEN MONTHS ENDING OCTOBER, 1966

			Rs.
Sales		..	2,50,000
Less Cost of goods sold			
Materials consumed	1,40,000		
Operating expenses including depreciation	80,000	..	2,20,000
	Net Profit		30,000

Before granting financial assistance to any small industry unit, the Bank usually sought the opinion of the Small Industries Service Institute about the physical viability and technical competence of the unit and the marketability of its product. The Bank wrote to the Institute about the unit. The Institute replied that the various items of machinery proposed to be purchased by the unit were considered essential, suitable and adequate for the manufacture of the proposed items of furniture. It was of the opinion that the service life of graded items of machinery was about eight years, while that of the ungraded items was about 5 to 6 years, if properly maintained and carefully used. It felt that, in view of severe competition, the prospects of sizeable sales of the unit's product depended upon the ability of the management to push the product in the market.

[3] *Pro forma* Balance Sheet and *Pro forma* Profit and Loss Account are prepared with the help of estimates for a future accounting period. In contrast, Balance Sheet and Profit and Loss Account are prepared with the actual figures available for a past accounting period.

[4] In the case of units already working, the audited Balance Sheet and the Profit and Loss Account showing the financial results of the previous year should also be furnished.

TABLE 6

PRO FORMA BALANCE SHEET

	Rs.			Rs.
Liabilities		*Assets*		
Capital assuming that the entire profit would be withdrawn by the partners	40,000	Fixed Assets	40,000	
		Less depreciation	4,000	36,000
Loan from bank				
(*i*) Instalment Credit	31,000	Current Assets		64,000
(*ii*) Cash Credit	35,000	Deposits and Advances		6,000
	1,06,000			1,06,000

TABLE 7

PRO FORMA PROFIT AND LOSS ACCOUNT FOR THE YEAR 1966

		Rs.
Sales on the basis of an estimated monthly turnover of Rs. 25,000		3,00,000
Less :		
Raw materials consumed (Rs. 14,000 × 12)	Rs. 1,68,000	
Wages	10,000	
Consumable stores	2,500	
Power fuel and maintenance	2,500	
Factory supervision and overheads	17,000	
Depreciation at 10 per cent on fixed assets Rs. 40,000	4,000	
Selling and distribution expenses including $12\frac{1}{2}$ per cent commission on sales to distributors	48,000	
Interest on borrowing and capital	10,000	2,62,000
	Net Profit	38,000
Less : Income-tax approximately 1/3rd of profits		12,000
	Net profit after taxes	26,000

The bank made sure of the availability of the raw materials needed for the manufacture like aluminium sheets, angles and tubes in the open market. It also felt that the available accommodation, power and water facilities in the industrial estate were adequate for the smooth running of the unit's manufacturing operations.

TABLE 8

FINANCIAL RATIOS[a]

			Norms
I. *Profitability :*			
(*i*) Net Profit/Sales 38,000/3,00,000	=	12.7%	8—10%
(*ii*) Net Profit/Total Working Funds 38,000/1,00,000 (Rs. 6,000 Deposits was not treated as active working funds)	=	38.0%	9—12%
(*iii*) Net Profit after tax/Equity[b] 2,6000/40,000	=	65%	25%
(*iv*) Expenses/Sales 90,000/3,00,000	=	30.0%	About 25%
II. *Equity-Debt and other ratios :*			
(*i*) Debt/Equity[c] 31,000/40,000	=	0.78 : 1	2 : 1
(*ii*) Liabilities (Bank Loan/Equity 66,000/40,000	=	1.65 : 1	5 : 1
(*iii*) Sales/Equity, 3,00,000/40,000	=	7.5 : 1	7 : 1
(*iv*) Equity/Block 40,000/40,000	=	1.0 : 1	0.75 : 1
(*v*) Sales/Block 3,00,000/40,000	=	7.5 : 1	5 : 1
(*vi*) Sales / Total working funds[d] 3,00,000/1,00,000	=	3 : 1	2 : 1

[a]A financial ratio is a quotient of two variables selected either from the Balance Sheet or the Profit and Loss Account or one from each of the two statements. Since they are expressions of key relationships between financial variables, they can reasonably be used to study the liquidity, profitability and long term solvency of a unit.

[b]Equity represents owner's investment in the business. It comprises capital brought in by the owner and profits retained in the business in the shape of Free Reserves—non-tax and non-cost.

[c]Block—Fixed Assets comprising buildings, plant and equipment.

[d]Total Working Funds—Funds employed for operations. Fixed Assets and Current Assets excluding deposits and advances.

The Bank had to satisfy itself about the financial feasibility, and solvency of the unit so necessary for its profitable working and debt repayment capacity. With the help of the pro forma balance sheet and the pro forma profit and loss statement, and after an independent investigation, the bank prepared the following revised financial statements for purposes of financial analysis. (Table 6 & 7). Using the figures of the estimated net profit, equity, bank loan and fixed assets, the following financial ratios were computed by the bank and compared with the standard ratios—norms—applicable for the metal furniture units of a similar size (Table 8).

A comparison of the financial ratios with the bank's norms revealed that the unit's scheme would be feasible and profitable.

Cash Flow Projection[5] *and Debt Service Coverage :*

To assess the debt repayment capacity of the unit, the following cash flow projection was made :

TABLE 9

CASH FLOW PROJECTION

	Rs.	
Net Profit after tax for 1966	26,000	
Add back depreciation provision	4,000	
Estimated annual cash accrual	30,000	
Annual instalment on Industrial Credit	6,000	
Debt service coverage		
Estimated yearly cash accrual	30,000	
Annual instalment on Instalment Credit	6,000	=5

[5]Cash Flow Projection is the estimated net income after taxes adjusted by adding back non-cash items like depreciation and deducting revenue items, which do not currently provide funds such as amortisation of deferred income. It represents funds provided by operations available in the form of current assets like cash, debtors and stocks.

That is, the estimated annual cash accrual was five times the annual instalment on Instalment Credit, which was considered highly satisfactory.

Granting Credit Facilities

(*i*) *For Fixed Capital Expenditure :* The Bank granted an Instalment Credit of Rs. 25,000 being roughly 75 per cent of the value of machinery, based on the lowest price quotations, payable direct to the suppliers of machinery by means of a pay order for 75 per cent of the invoice value.[6] The credit sanctioned was secured by the pledge of machinery which was to be bought at a cost of Rs. 35,000 (Appendix I). The Instalment Credit including finance charge of Rs. 6,200—in all Rs. 31,200—was repayable from 1966 through 1970 in nine half yearly instalments of Rs 3 000 each and a tenth half yearly instalment of Rs. 4,200.

(ii) *For Working Capital Expenditure :* It was the practice of the bank to finance the working capital expenditures by granting cash credit against hypothecation of inventories and over draft facilities against outward sales invoices. It fixed the margins for the cash credit, considering the nature of the industry, the nature of the raw material in terms of its resale value, the nature of the product in terms of the market, the credit and the repayment record of the customer. The permissible finance that could be offered to the unit was worked out as shown in Table 10.

In the first week of January, 1966, the bank granted the Unit credit facilities for a period of one year subject to the satisfactory production of accounts in the meantime (Table 11).

The cash credit and the overdraft facilities were collaterally secured by the deposit of title deeds in respect of house property, valued at Rs 60,000 belonging to one of the partners. All the

[6]Purchase of tools and dies and electric installation expenditure were not financed by this credit facility. The loan would be granted for a maximum period of five years repayable in quarterly or half-yearly equated instalments at 9 per cent interest. This is available to purchase moveable equipment, new or second hand in a reasonably good working condition.

advances were covered by the Reserve Bank of India Credit Guarantee Scheme[7].

TABLE 10

LOAN FOR WORKING CAPITAL EXPENDITURE

	Unit's working capital requirement	Margin	Permissible bank finance
	Rs.	%	Rs.
(*i*) Raw materials—three months requirements	42,000	75	31,500
(*ii*) Finished goods—one week sales	6,000	60	3.600
(*iii*) Work-in-process one day	1,000	50	500
			35,600

TABLE 11

CREDIT FACILITIES GIVEN BY THE BANK

	Limit Rs.
(*i*) Cash Credit (Lock & Key) against raw materials and finished goods	20,000
(*ii*) Cash Credit (open type) against raw materials, finished goods and work-in-process	15,000
The maximum drawings against finished goods under both the credits should not exceed Rs. 6,000 at any one time	35,000
(*iii*) Unsecured Overdraft against outward bills accompanied by lorry receipts, railway receipts, delivery challans evidencing despatch of goods	5,000
Margin : 10 per cent	
Cover period : 4 weeks	

[7]The Reserve Bank of India provides protection at a nominal fee to banks, State Financial Corporations, etc., in order to encourage them to lend liberally to small-scale industries. The Reserve Bank of India requires a fair idea of the borrowing unit's working and financial position in order to issue the guarantee.

Unit's Working

In January 1966, Premdayal exhibited samples of aluminium furniture at the All-India Industrial Exhibition held in the city, to test the demand for the product but found very poor consumer response. Hence he decided to concentrate on the manufacture of steel furniture including hospital equipment. As he had planned the purchase of the requisite machinery, he found the existing premises inadequate to instal all the items of machinery. So, he applied to the Estate Authorities for an adjacent piece of land in order to extend the unit's premises. But he expected that it would take two months to get the allotment. He also applied to the Director of Industries and Commerce for the registration of the manufacture of steel furniture in order to obtain quotas of steel sheets, tubes and rods at the controlled prices. However, Premdayal anticipated that it would take at least two to three months before he could secure the Certificate of Registration and the steel quota from the Directorate. In the circumstances, he had to readjust the machinery requirements and phase the purchase of the machinery over a few months. For instance, the press brake—4′ costing Rs. 2,000 was to be fabricated in the unit while the purchase of 6′ lathe costing Rs. 8,832 was given up. A punching press of 20 ton capacity costing Rs. 4,300 was to be purchased instead of one with 30 ton capacity costing Rs. 8,050. Further, Premdayal felt that the consequent late starting of operations and severe competition would reduce the net cash inflows from operations to too meagre an amount to pay off the half-yearly instalment on the Instalment Credit, if utilised then. So, he thought of postponing the operation of Instalment Credit. He wanted to purchase items of machinery costing Rs. 16,000 in the first instance and the remaining soon after the receipt of the certificate of registration allotment of steel quota and the adjacent land. He approached the bank for an interim accommodation of Rs. 12,000—being 75 per cent of the value of the machinery to be purchased—in lieu of the Instalment Credit. Considering the initial set-backs to the unit, the bank granted an interim overdraft of Rs 12,000 in March, 1966 to be converted into the already sanctioned Instalment Credit by the end of June, 1966. The purchase of machinery did not materialise till about the end of April, 1966. As the unit started production, intermittent non-availability of electric power

supply hampered the continuity of production. In May, 1966, the unit received the certificate of registration from the Directorate and a communication that no assurance could be given about the supply of steel tubes, rods etc., since allotment depended largely upon the supply position to the State of Andhra Pradesh and the import policy of the Government of India from time to time.

In June, 1966 the bank was to convert the interim overdraft into the Instalment Credit. Premdayal apprised the bank of the unit's difficulties and requested an extension of the period of interim overdraft facility till December, 1966. The bank agreed to it as a special case. In December, 1966 Premdayal wanted to add a few other items of machinery costing Rs. 5,000 and approached the bank for an additional interim overdraft facility of Rs. 4,000 being roughly over 75 per cent of the value of the proposed items of machinery to be purchased. Since the bank was interested in the unit's building up a sound fixed asset base, so necessary for the yield of earnings which would be enough for the payment of instalments on the Instalment Credit, it sanctioned an interim overdraft for the amount to be finally adjusted to the Instalment Credit. The Superintendent, in the Bank for advances to Small Scale Industry, made a review of the Instalment Credit position. The Instalment Credit for financing the fixed capital needs of *Messrs. Utility Metal Works* was granted on the basis of a feasibility study made by the Bank after receiving a technical report about the unit from the Small Industries Service Institute. But it could not be utilised by the unit for nearly two years due to the unit's late recognition of the near absence of a market for aluminium furniture, its first proposed line of manufacture, and unavoidable delays, inherent in the switchover to the alternative of steel furniture manufacture which, in turn, delayed the setting up of an adequate fixed asset base to generate the needed income flows to pay off the annual instalments on Instalment Credit.

By this, he concluded that the Bank, to be more progressive and constructive in the development of small-scale industry, went to the rescue of the unit with the liberal alternative of interim overdraft. While he felt happy with the attitude of the bank, he conjectured that market projections which formed the core of feasibility studies should have been done more meticulously

either by the SISI or the bank in the interests of greater selectivity of investment and larger turnover of bank funds earmarked for instalment credit instead of being bogged down in shaky projects like *The Utility Metal Works.* The wide divergence between the projected figure of sales used by the bank for estimating the net cash accrual and the sales that materialised during the year lent support to his conjecture.

Operating Performance and Utilisation of Credit : The Unit started production in May, 1966. Its sales from June, 1966 to November, 1966 amounted to Rs. 19,700 and from November, 1966 to June, 1967 to Rs. 88,500. The net profit rose from Rs. 2,600 to Rs. 7,000 during the period. Premdayal anticipated an early increase in the unit's monthly production to the target of Rs. 25,000 . He had also expanded the unit's sales organisation by opening a show-room in the heart of the city. In the middle of June, 1967 the Directorate of Commerce and Industries allotted to the unit 30 tons of mild steel sheets and tubes valued at about Rs. 30,000 which cost at least Rs. 300 per ton extra in the local market. Moreover, the irregular allotments of steel quotas could not match the timing of the production needs; hence, Premdayal was forced to purchase raw materials at higher prices in the open market. Labour costs also rose in the meantime. Thus, the working capital expenditures increased. But, Premdayal could not utilise the Lock and Key cash credit limit all the time due to the non-availability of a godown either in the factory or in its vicinity to stock materials and finished goods under the bank's custody and more so due to the inability of depositing the requisite sales proceeds daily into the account in order to obtain the release of the inventories from the godown under the bank's lock and key.

Thus *Utility Metal Works* was not in a position to operate the Lock and Key cash credit limit meant to finance a major part of the working capital needs, largely because of the difficulty in depositing cash proceeds into the cash credit account to get the release of raw materials as and when needed for its continuous production. Premdayal felt that while the Lock and Key device assured safety of funds to the bank, it could not prove a satisfactory device of financing the working capital needs of a unit following a policy of continuous production but experiencing a delayed and poor sales volume due to severe competition. In

fact, he wondered whether the bank would realise the futility of this device in the circumstances and subsequently merge it with the open type cash credit account.

In early July, 1967, Premdayal received a letter from the bank asking for the finalising of the Instalment Credit for the amount of the interim overdraft of Rs. 16,000. In addition to this, the cash credit and overdraft facilities were due for review and renewal.

In order to meet the increased working capital requirements, Premdayal requested the bank for a revision of the terms of credit on the following lines :

(*i*) The Lock and Key limit to be merged with the Open type limit.

(*ii*) The margins on raw materials to be relaxed from 25 per cent to 20 per cent and on stock-in-process from 50 per cent to 30 per cent. Premdayal contended that the present margin of 25 per cent on raw material stocks, which comprised mostly mild steel sheet, would work out in effect to 50 per cent margin, if such raw materials for advance purposes were valued at the market price which was easily 25 per cent higher than the controlled price which the bank considered normally for purposes of granting advances.

In the case of stock-in-process, in order to fix the margin, only the raw material cost of the stock-in-process was being taken into account by the bank but not the labour and other overhead costs that went into it. As such, Premdayal felt that there was good reason for a reduction in the existing margin of 50 per cent.

Regarding the margins on finished goods, Premdayal felt that the market price should be considered for fixing the margin of 40 per cent instead of the cost price since his products had a ready market and as such, notionally, the present margin on the basis of cost price would work out to 50 per cent on sales price. Secondly, during the previous four months, the average monthly production of the unit had increased to Rs. 16,000 and within the next two or three months would touch Rs. 25,000. As a result, one month's production was required to be kept in stock instead of the current one week's production. This would involve an increase in the current working capital requirement.

On these grounds, he pleaded for Rs. 15,000 drawing power on finished goods as against the current Rs. 6,000.

(*iii*) The ceiling of 25 per cent of the total production to be stocked in the show room was to be relaxed as increased stocking was necessary in the absence of a godown and increase in the volume of business.

Thus, the request for relaxation in the margins on raw materials and work-in-process to set the cash credit limits was due to an increase in the working capital needs due to rising costs of labour and raw materials. Premdayal felt that if the bank stuck to valuing raw materials at controlled rates which were the lowest—the unit might not be able to purchase its entire stock of raw material at that rate—in order to determine the credit limits, it had to think of either relaxing the margins as a deserving case and tighten the operation of open type cash credit, or valuing the raw material at the ruling market price and offer 'Lock and Key' credit.

Bank's Review and Renewal of Credit Facilities :

In response to Premdayal's request for a revision of the existing credit facilities, the Superintendent, Small Industry Advances, ordered a critical assessment of the credit facilities so far enjoyed by the unit :

(i) *Open type cash credit limit :* He found that the unit was not routing all its sale proceeds through the open type account. A major portion of the sale proceeds was being deposited in a bank near its factory. As a result, the deposits into the open type account not only declined but the gap between the deposits and withdrawals widened as shown hereunder :

	Jan. to Dec. 1966 Rs.	Jan. to Dec. 1967 Rs.
Amount withdrawn ..	31,000	45,000
Amount deposited ..	16,000	14,000

The Superintendent personally felt that the open type cash credit had its own drawbacks from the point of view of the bank, since especially the deposit performance of the unit was far from satisfactory though his bank might have deemed the performance of the unit relatively satisfactory in view of its at

least having deposited over 30 per cent of its withdrawals during the half year ending June, 1967. Due to the fact that *Utility Metal Works* was depositing a major portion of its sales proceeds in another bank instead of in the cash credit account in his bank, he wondered whether there was need for stricter regulatory measures about the operation of open type of cash credit.

(ii) *Overdraft against outward bills :* The unit submitted only two bills out of which one for Rs. 2,150 was returned unpaid and the other for Rs. 850 removed from cover. The unit promised to regularise this account and route all its bills in future through this bank only.

In order to renew the cash credit and overdraft facilities for six months to January 1968, the unit's working capital needs had to be revised in the light of a low volume of sales. The monthly sales were estimated at Rs. 20 000, their raw material cost at Rs. 12,000 and other expenses at Rs. 6,000. The permissible credit was worked out as shown in Table 12.

TABLE 12

PERMISSIBLE BANK FINANCE

	Unit's working Capital requirement	Permissible bank Finance
	Rs.	Rs.
(*i*) Raw material—3 months' requirement	36,000	
less margin 25%	9,000	27,000
(*ii*) Work-in-process—1 week's production	4,500	
less margin 50%	2,250	2,250
(*iii*) Finished goods—I week's sales	5,000	
less margin 40%	2,000	3,000
	45,500	32,250
(*iv*) Debtors—I month's credit sales equal to ½ of total sales	10,000	7,500
less margin 25%	2,500	
(*v*) Expenses—I month	6,000	6,000

After assessing the unit's working capital requirements and estimating the permissible limits, the bank granted the following credit facilities (Rs. 35,000) for the period :

(*i*) Cash Credit Open Type, Rs. 30,000
Margin on : Raw materials, 25%; Work-in-progress, 50%, Finished goods, 40%.

Maximum drawings against finished goods should not exceed Rs. 10,000 at any one time. It will be recalled that Premdayal had asked for an extension upto Rs. 15,000 from Rs. 6,000.

(*ii*) Unsecured Overdraft against outward bills upto 75% of the value of the bills tendered Rs. 5,000
Cover period 6 weeks
Collateral security as before

The Superintendent was not prepared to relax the margins but as a concession, raised the ceiling of 25% on finished goods to be exhibited in the Unit's show-room as requested by Premdayal. In order to finalise the Instalment Credit, a profitability and cash flow projection statement was prepared on a revised basis (Table 13).

TABLE 13

PROFITABILITY AND CASH FLOW PROJECTION FOR 1967-68

	Rs.
Sales Rs. 20,000 per month	2,40,000
less Operating costs including cost of goods sold	2,20,000
Net profit	20,000
less Income tax—approximately 1/3	7,000
	13,000
add back Depreciation	3,000
Annual cash accrual	16,000

Annual Instalment on Instalment Credit Rs. 4,800
Debt Service Coverage is roughly $3\frac{1}{2}$ times
The Instalment Credit was finalised as follows :

Total interim overdraft accommodation for purchase of machinery	16,000
Add finance charge	2,914
Amount of Instalment Credit	18,914

repayable in 15 quarterly instalments commencing from 1st October, 1967 and ending on 1st April, 1971

Fourteen instalments of Rs. 1,200 each	16,800
Fifteenth Instalment of	2,114
	18,914

APPENDIX I

Messrs. Utility Metal Works

Items of Machinery Proposed to be Purchased under Instalment credit

	Cash selling price (Rs.)
1. Bench Type Drilling machine $\frac{1}{2}''$ capacity ..	1,909
2. Pipe Bending Machine with $\frac{3}{4}''$, 7/8" and 1" dies of 3" and 4" radius (F.O.R.) ..	1,000
3. Punching Press 30 tons capacity with 3 M.P. motor and starter (F.O.R.) ..	8,050
4. Gas Welding Set ..	500
5. Disc Grinder Portable 6" ..	919
6. Double Ended Pedestal Grinder 12" ..	1,695
7. Polishing Lathe 4" ..	757
8. Lathe 6' C.I.F. ..	8,832
9. Air Compressor with spray guns and switch 60 lbs/square inch	1,325
10. Pipe Cutting Machine, F.O.R. ..	2,400
11. Drilling Machine 3/8" capacity—Heavy duty and portable ..	387
12. Motorised Blower with motor and starter ..	650
13. Cast Iron or M.S. Blocks 4' × 6" for smithy 3 numbers ..	2,100
..	30,524
Freight, installation charges ..	4,476
	35,000

APPENDIX II

Messrs. Utility Metal Works

Profit and Loss Statement for 1967-68

	Rs.	Rs.
Sales		1,40,000
less cost of goods sold		57,000
Gross operating margin		83,000
less operating expenses	73,400	
less Depreciation	2,600	76,000
Net Profit		7,000

APPENDIX III

Messrs. Utility Metal Works

Balance Sheet as at the end of 1967-68

Liabilities	Rs.	*Assets*	Rs.
Capital after adding profits and deducting drawings, etc.	35,000	Fixed Assets	23,500
Loans			
Open type cash credit	30,600	Current Assets	59,500
Instalment credit	16,000	Advances and Depo-	
Against bills	1,800	sits	4,700
Other liabilities	4,300		
	87,700		87,700

2. Messrs. Hind Furniture and Appliances

Messrs. Hind Furniture and Appliances was started in late 1964 as a proprietorship concern with a capital of Rs. 20,000 to produce steel furniture in the first instance and to manufacture electronic equipment like pen type radio receiver sets, automatic water taps and car ariels eventually, by retaining adequate profits arising from the production of steel furniture. The commercial production and marketing of electronic items required long research and adequate initial investment. Mr. Mohan Raj, the promoter-proprietor of the unit had previously been working in the electronics division of *The Southern Automobiles Ltd.*, for three years and as production Manager in *The Tiger Steel Furniture Works* for over two years. Besides being a man of means, he had also the support of a friend who offered his personal guarantee worth Rs. one lakh to the bank for obtaining credit facilities to the unit. The unit employed 10 skilled and 12 unskilled workmen.

Mohan Raj planned the unit's level of production for an average annual sales of Rs. 10,000 in the first two years. gradually to be developed later into Rs. 25,000. He wanted to concentrate on the district markets and the government departments.

In the first year of the unit's working, the sales amounted to Rs. 10,000 and the net profit to Rs. 2,000. Encouraged by the first year's performance, Mohan Raj wished to expand the unit's sales to Rs. 24,000 during 1965-66. The existing installed capacity of plant and equipment valued at Rs. 14,000 was considered sufficient to cope with the planned increase in production. However, the working capital of Rs. 6,000 consisting of finished and semi-finished goods valued at Rs. 5,000 and cash Rs. 1,000 was considered inadequate for the increased production.

In April, 1965 Mohan Raj applied to the bank for a loan of Rs. 10,000 to meet the unit's increased working capital requirements. The breakup of the loan was : (*i*) Against stocks of materials and finished goods Rs. 3,000; (*ii*) Against bills covering sale of goods, Rs. 3,000; and (*iii*) Documentary letters of credit, Rs. 4,000.

The Balance Sheet as on March 31, 1965 and the Profit and Loss Statement for 1964—65 furnished to the bank, are given in Tables No. 1 & 2.

TABLE 1

BALANCE SHEET AS ON 31ST MARCH, 1965

Liabilities	Rs.	*Assets*	Rs.
Capital	20,000	Machinery, Tools and Equipment	14,000
		Inventories	5,000
		Cash in hand and at bank	1,000
	20,000		20,000

TABLE 2

PROFIT AND LOSS STATEMENT FOR 1964-65

	Rs.		Rs.
Sales			10,000
Less Cost of goods sold			
Materials	5,000		
Other expenses	2,000		7,000
		Gross Profit	3,000
Less Selling and distribution expenses			1,000
		Net Profit	2,000

The bank got a favourable report from the Small Industries Service Institute. On the basis of the unit's previous year's performance, the bank estimated the working capital requirements for a production of Rs. 24,000 sales value (Table 3).

TABLE 3

WORKING CAPITAL

	Estimated sales for 1965-66	Rs. 24,000
	Raw material cost thereof	Rs. 12,000
(*i*)	Raw materials—2 months' production	2,000
(*ii*)	Finished goods—2 months' sales at cost	3,200
(*iii*)	Debtors—½ month's sales	1,000
(*iv*)	Cash to cover one month's expenses	800
	Working capital required	7,000

Satisfied with the profitability, liquidity and equity base of the unit, the bank sanctioned the credit facilities, shown in Table 4.

TABLE 4

CREDIT FACILITIES

		Rs.
(*i*)	Cash credit (Lock and Key) against pledge of raw materials and finished goods	3,000
	Margins : Raw materials 25%	
	Finished goods 40%	
	Drawing against finished goods should not exceed Rs. 2,000 at any one time	
(*ii*)	Unsecured overdraft against bills in the course of collection accompanied by railway receipts, lorry receipts, delivery challans, etc.	1,000
(*iii*)	Unsecured overdraft for meeting margins and expenses*	1,000
	Repayable in monthly instalments of Rs. 100 each	5,000

**Clean Overdraft to meet margins and expenses* :—When credit facilities are sanctioned to units against pledge of goods, certain margins are retained by the bank. This margin representing a portion of the unit's total working capital requirement has to be met invariably by the unit. But, in exceptional cases, where even this margin or expenses, not covered by the cash credit facilities, cannot be met by the unit, the bank goes to the rescue of the unit by allowing it an unsecured overdraft to meet such expenditure.

All the above advances were collaterally secured by the pledge of the unit's unencumbered machinery valued at Rs. 10,000. In June, 1965, the bank enhanced the limit of overdraft against bills from Rs. 1,000 to Rs. 3,000 on request from Mohan Raj on the basis of orders from the government to the tune of Rs. 4,000 in addition to the normal estimated monthly turnover and also because the realisation of the amount from the government would generally take a longer time than the normal period of 15 days required for the payment of such bills by the government[8].

In July 1965, Mohan Raj negotiated with the Electricity Department for an order of Rs. 50,000 which was expected to be executed in 5 instalments of Rs. 10,000 each. Besides, the normal monthly turnover rose to Rs. 5,000. Thus, the aggregate monthly turnover was estimated to be about Rs. 15,000 instead of the modest turnover of Rs. 2,000 assumed by the bank originally for the purposes of estimating the working capital requirements of the unit. Mohan Raj again approached the bank for a loan. In view of the large volume of business enjoyed by the firm, and the integrity and diligence of Mohan Raj, the bank sanctioned additional credit facilities. To do so, the bank recomputed the working capital requirements on the basis of the increased monthly turnover (See Table 5).

In the light of the above, the bank granted the following additional credit facilities : (i) Cash credit (open type) against raw materials and finished goods, Rs. 3,000; and (ii) Increase in the overdraft limit for the specific purpose of purchasing the welding set, Rs. 1000.(This additional overdraft facility was to be repaid in ten monthly instalments of Rs. 100 each).

In September, 1965 Mohan Raj started supplying furniture to the government departments against firm orders to the extent of Rs. 10,000 and had bills to the tune of Rs. 7,000 to be presented

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[8]The enhanced limit of Rs. 3,000 was arrived at as follows :

Estimated order from government	Rs.	4,000
Less 20% margin		800
Limit permissible		3,200
Limit recommended		3,000

TABLE 5

RECOMPUTED WORKING CAPITAL

	Rs.
Estimated monthly sales on the basis of the reported Rs. 15,000 current monthly turnover	12,000
(*i*) Raw materials—one month production instead of two months originally estimated	6,000
(*ii*) Finished goods—½ month sales at cost instead of two months originally estimated	4,800
(*iii*) Debtors at cost ½ month sales	4,800
(*iv*) Cash for one month expenses	1,800

to the government departments for payment. Further, the unit had to supply furniture from the stocks in the open type cash credit account while the government departments took their own time in expediting despatch of relative acknowledgements or delivery challans to enable Mohan Raj to prepare and submit the bills for payment and thus cover and adjust the outstandings in the unit's cash credit—open type—account. So, Mohan Raj approached the bank for increasing the existing unsecured overdraft limit of Rs. 3,000 to Rs. 6,000—margin 20%, cover period two months—and an unsecured overdraft limit of Rs. 3,000—margin 20%, cover period one week—for the specific purpose of releasing stocks covered under the bank's pledge, for despatch to government departments. The bank granted the increase in the overdraft limits to relieve the unit from possible financial strain. Thus, the unit began to enjoy the following credit facilities from the bank (Table 6) :

TABLE 6

CREDIT FACILITIES

	Rs.
(*i*) Cash credit (Lock and Key)	3,000
(*ii*) Cash credit (Open Type)	3,000
(*iii*) Unsecured overdraft (Outward bills)	6,000
(*iv*) Unsecured overdraft (Trust letters)	3,000
(*v*) Clean overdraft to meet margin and expenses	2,000
	17,000

But to the ultimate dismay of the bank, the overdraft was used by the unit mostly for its district sales for which payment was not forthcoming from the parties. The Superintendent Small Scale Industry Advances, wondered whether he was too liberal in granting overdrafts to *Hind Furniture Appliances*, led away by the seeming optimism about its volume of business in the wake of a huge government order. He thought that he ought to have exercised restricted liberalism in such cases.

For two years from 1964 to 1966, the unit's progress was reported to be good. However, thereafter it was reported that the unit's accounts became unsatisfactory and many irregularities became evident in the unit's dealings with the bank. Mohan Raj stopped sending stock statements in respect of cash credit open type limit for Rs. 3,000, after February, 1966. The repeated requests of inspecting officials of the bank went unheeded. It was found later that there were no stocks in the factory. Hence, the unit had no drawing power on its open type account which showed a debit balance of over Rs. 3,000. Mohan Raj was told to adjust the outstanding amount immediately. In regard to the unsecured overdraft limit of Rs. 6,000 against outward bills, 20 bills drawn by the unit on parties in the districts were returned unpaid for the reason that payment was not forthcoming. These bills had been outstanding in the bank's books for a long time and were removed from cover. Mohan Raj was asked by the bank to clear these bills at an early date. Mohan Raj had received a clean overdraft limit of Rs. 2,000 for meeting margins and expenses on condition that he should repay the amount in monthly instalments of Rs. 100 each. But he failed to pay the instalment on clean overdraft regularly. By October 25, 1966 the following was the position of advance facilities offered by the bank to the unit (Table 7)

Mohan Raj promised to regularise the position soon but did not do so. Personal meetings of the bank staff with him were of no avail. To get out of the difficulties, Mohan Raj tried to take into partnership a local financier but his efforts in this direction did not materialise. The guarantor removed the machinery from the factory which was pledged to the bank as security. There were large arrears of rent and the landlady for the unit's godown which was under the bank's lock and key,

TABLE 7

ADVANCE FACILITIES GIVEN BY THE BANK

	Limit Rs.	Outstanding Rs.
(*i*) Cash credit (Lock & Key)	3,000	2,495
(*ii*) Cash credit (Open Type)	3,000	3,267
(*iii*) Overdraft—outward bills	6,000	7,262
(*iv*) Clean overdraft	2,000	806
		13,830

put a lock of her own on the godown door.. The Superintendent of the bank wrote both to Mohan Raj and the guarantor, Lekhraj that his bank would have to institute legal proceedings, if they failed to pay off all the dues. But the bank could not recover the money except by resort to legal action.

Appendix IV

Terms and Conditions Governing Advances

(1) *Cash Credit (Lock and Key)*	(2) *Cash Credit (Open Type)*
(*a*) The advance sanctioned towards working capital is repayable on demand.	(*a*) Same as Lock and Key
(*b*) The advance will be secured by a pledge of the undernoted stock-in-trade of the unit stored in godowns approved by the Bank under the Bank's lock and key : (i) raw-materials : aluminium sheets, angles and tubes and other hardware (ii) Finished goods : Aluminium products.	(*b*) The advances will be secured by a pledge of the undernoted stock-in-trade of the unit (i) raw-materials: aluminium sheets, angles, M.S. tubes and other hardware. (ii) finished and semi-finished goods : aluminium products.
(*c*) *Margins* : Raw materials 25%; Finished goods 40%.	(*c*) *Margins :* Same as Lock & Key semi-finished goods : 50%

The unit will be permitted to draw upto 75%, 60% and 50% of the value of the raw materials and finished and semi-finished goods respectively pledged to the bank subject to a maximum limit of Rs. 20,000 in the case of Lock and Key and Rs. 15,000 in the case of Open Type. It must be ensured that the balance outstanding in the account is at all times covered by the value of the stocks pledged to the bank less the margins as stipulated above. If, due to variations in the current market/controlled prices of the stocks, there is a reduction in the advance value of the stocks pledged, the unit should forthwith pay into the account the resultant shortfall, if any.

(*d*) *Valuation* :—The raw materials under pledge to the bank will be valued at the invoice/current market/controlled rates whichever are the lowest. Finished and semi-finished goods will be valued at cost price arrived at on a conservative basis.

(*e*) *Evidence of Pledge* : The bank's name boards will be displayed prominently at the entrance to the godown (s) wherein

stocks pledged to the bank are stored and the godowns will be locked with the bank's own padlocks.

In the case of Open type, the bank's name boards will be displayed prominently at the entrance of the factory premises/ houses wherein stocks pledged to the bank are stored/processed. While the unit will be allowed possession of the stocks merely for facilitating the processing thereof, it is a condition of this advance that the unit shall maintain accurate and upto-date record of all stocks in its possession including those received and delivered by it. During nights, and/or whenever the factory is not working, the factory gates shall be locked with the bank's padlocks, one key of which will be retained by the unit in trust for and on behalf of the bank.

(*f*) *Stock Statements :* The unit should submit to the bank detailed stock statements at monthly intervals as at the end of each calendar month with a certificate appended thereto. The certificate should be signed by the proprietor/one of the partners/directors of the unit. "We hereby certify that the above stocks are our own property and no one else other than the bank has any claim thereon. The stocks are stored as described in the return and the rates shown herein are those actually ruling in the market/the controlled/the invoice/the landed rates. We further certify that such of those stocks which require to be insured against fire are duly insured in the joint accounts of the bank and ourselves".

(*g*) *Insurance :* All stocks under pledge to the bank should be fully insured against fire risks in the joint names of the bank and the unit with an insurance company approved by the bank and related policies deposited with the bank.

(*h*) *Interest :* Interest on the Lock and Key advance will be charged at $\frac{1}{4}\%$ over the State Bank of India advance rate with a miniumum of $7\frac{3}{4}\%$ per annum with quarterly rests.

(*i*) *Other conditions, if any :*—The limit will be collaterally secured by the deposit of title deeds in respect of house property valued at Rs. 60,000 belonging to one of the partners.

The Reserve Bank of India Guarantee Commission at the rate of $\frac{1}{4}\%$ on the limits sanctioned will be charged to the account whenever the limit is sanctioned, renewed or enhanced.

(3) *Overdraft Limit Against Bills in the Course of Collection :* Rs. 5,000.

(*a*) The advance sanctioned towards working capital is repayable on demand.

(*b*) All the unit's bills should be collected through the bank.

(*c*) Bills should be accompanied by railway receipts/ lorry receipts/delivery notes, etc., evidencing goods despatched/supplied.

(*d*) Margin 10% i.e., the unit will be permitted to draw up to 90% of the amount of the bills which are in the course of collection, subject to the maximum limit of Rs. 5,000.

(*e*) Interest will be charged at $1\frac{1}{4}$% over State Bank of India advance rate with a minimum of $8\frac{3}{4}$% per annum with quarterly rests.

(*f*) *Cover period :* Bills outstanding for more than four weeks will be removed from overdraft cover for the advance and those outstanding in the account in excess of the resultant reduced drawing power, if any, should be made good by the unit forthwith.

(*g*) *Authority to collect bills :* To enable the bank to collect proceeds of the bills drawn on various government departments, the unit should execute a power of attorney in favour of the bank in the prescribed form. The unit should also undertake in writing that the proceeds of bills which may be remitted to it direct by the purchasers will be paid to credit of its account promptly.

(*h*) The transport companies to which the transport of goods is entrusted should be of undoubted standing and should have been approved by the bank.

(*i*) All consignments sent by lorry should be fully insured against transit risks.

(*j*) Actual out-of-pocket expenses incurred for collection of each bill will be charged to the account.

(*k*) Collateral security and RBI guarantee commission as in the case of cash credit lock and key or open type.

APPENDIX V

Broad Particulars of Small-Scale Industries Loan Application Form

A. *Details of Unit :*

(*i*) Name and Address
(*ii*) Date established and brief history
(*iii*) Nature of Business and Constitution
(*iv*) Name(s) of proprietor/partners/directors/managing committee members
(*v*) Factory Premises : Location; Own/Leased; Terms of lease
(*vi*) Particulars of assets and liabilities in prescribed form
(*vii*) Details of maintenance of account, audit and tax aspects

B. *Business :*

(*i*) Products manufactured and a short account of the manufacturing processes involved, indicating average time taken for conversion of raw material into finished product and whether goods-in-process could be measured/valued, within reasonable margins of error
(*ii*) How the business was financed in the past and reasons for approaching the bank for accommodation
(*iii*) Whether finished products are "Quality Marked" or conform to ISI specifications; if not, to what standards are products made and whether they have a ready market
(*iv*) Particulars and value of firm orders, if any, on hand
(*v*) General conditions obtaining in the industry

C. *Working Results :*

Accounting year ended/ending

.....19 (Previous year)	.....19 (Estimate for current year)	.....19 (Forecast for next year, if substantial expansion is planned)

(*i*) Purchase of raw materials
(*ii*) Sales
(*iii*) Gross Profit (before depreciation and taxation)
(*iv*) Depreciation

(*v*) Taxation
(*vi*) Net Profit
(*vii*) Number of workers
(*viii*) Number of shifts worked

D. *Production :*
(*i*) Current monthly production (estimated sale value)
(*ii*) Cost of monthly production
(*iii*) Raw material content of (ii) in value

E. *Monthly Requirements of raw materials (main items)*

Particulars	Sources of supply	Value
Imported items :		
(*i*)		
(*ii*)		
Indigenous Items :		
(*i*)		
(*ii*)		
	TOTAL	

F. *How many months' requirements of raw materials is it necessary to stock so that factory operations may be carried on smoothly?*

Value of monthly requirements	How many months' requirements proposed to be stocked?	Total value
Imported items :		
Indigenous items :		
	TOTAL	

G. *Finished Goods—maximum stocking contemplated :*

Description of finished goods	Quantity proposed to be stocked and how many weeks' production it represents	Cost : Sale price value	Notes to explain reasons to enable bank to understand why it is necessary to stock finished goods to the extent indicated

NOTE : Information under heads "C" to "G" represents the bank's general requirements only. Any items which cannot be readily completed may be left out.

H. *Value of Stocks on hand as on date of application :*

(*i*) Raw materials
(*ii*) Goods-in-process : semi-finished goods
(*iii*) Finished goods
(*iv*) Stores

Total

I. *Advances from buyers :*

Are advances received from buyers placing orders? If so, please explain how much money is on an average available for the unit's use.

J. *Marketing :*

(*i*) Where the products are marketed, names of the principal buyers and season, if any, for sale of the products
(*ii*) Terms of sale in respect of the principal buyers
(*iii*) Extent of sales (other than cash sales) for which bills are drawn, types of bills drawn, period for which bills normally remain outstanding and the anticipated amount of bills likely to remain outstanding at any one time.

K. If advances are required against bills, types of bills against which accommodation is required and nature of documents that will accompany them.

L. *Purchases :*

(*i*) Description of raw materials and names of the larger suppliers of materials
(*ii*) Terms of purchase of raw materials; indicate period for which credit has been obtained from suppliers
(*iii*) Particulars of import licences/quotas held and expected
(*iv*) Season, if any, for purchases of raw materials
(*v*) Arrangements for clearance of goods
(*vi*) Raw materials for which letters of credit may have to be opened and maximum extent to which this may be necessary.

M. *Finance. :*

	Amount	*Security*

(*i*) *Details of present borrowings :*

(*a*) From State Government
(*b*) From State Financial Corporation
(*c*) Dues to National Small Industries Corporation
(*d*) From State Bank of India or its subsidiaries
(*e*) Dues to multanis/money lenders
(*f*) Dues to any others

(*ii*) Purpose for which credit facilities are required from the bank: (Explain what is proposed to be done with the funds that will be generated by the grant of credit facilities by the bank).

(*iii*) *Advance limits required :*

(*a*) Against stocks
(*b*) Against bill covering sale of goods
(*c*) Documentary letters of credit
(*d*) Any other facility (give details).

APPENDIX VI

Broad particulars of instalment credit application form :

1. *Business Information :*

(*a*) Name of Business and nature of business
(*b*) Year established
(*c*) Location
(*d*) Rated capacity
(*e*) Constitution :....; percentage of ownership of principals
(*f*) Premises—owned or leased; if leased, annual rent...

2. *Financial Position :*

(*i*) *Balance Sheet :* proforma or audited statement showing current assets, their total; fixed assets, their total, current liabilities, their total; Mortgage loans from banks mortgage loans from others; net Worth or Capital and Surplus.

(*ii*) *Profit and Loss :*

(*a*) Annual net sales for year ending
(*b*) Operating expenses
(*c*) Depreciation
(*d*) Overhead expenses
(*e*) Salaries of proprietors or officers
(*f*) Trading profiit
(*g*) Miscellaneous Income
(*h*) Balance in Profit and Loss Account
(*i*) Distribution to proprietors by way of dividends, etc.
(*j*) Provision for taxation
(*k*) Other Provisions
(*l*) Amount carried to net Worth
(*m*) Balance in Profit and Loss Account

(*iii*) *Particulars relating to financial statement :*

(*a*) Assets pledged or hypothecated
(*b*) Obligations of the unit as endorser or guarantor
(*c*) Judgments or legal proceedings pending
(*d*) Whether merchandise, machinery and equipment etc. is covered by insurance.

3. *Particulars of fixed assets owned :*

(*a*) Description
(*b*) Date of purchase
(*c*) Original cost
(*d*) Depreciation
(*e*) Book value
(*f*) Estimated value
(*g*) Whether encumbered or unencumbered
(*h*) in the case of machinery, purpose for which used.

4. *Particulars of all loans or debts now outstanding :*

(*a*) To whom owned
(*b*) Nature of loan or debt
(*c*) Nature of security charged, if any
(*d*) Original amount
(*e*) Balance unpaid
(*f*) Manner in which the balance is required to be repaid where a debt is for a fixed term, and the amount is repayable in specified instalments, the amount and periodicity of instalments should be indicated.

5. *Particulars of Equipment to be purchased :*

(*a*) New or used

(*b*) Make and kind of article

(*c*) Model No. and serial number

(*d*) Cash selling price showing documentary evidence

(*e*) Normal useful life as indicated by manufacturers.

6. The use to which the equipment will be put and the source from which repayment will be made

7. Cash Price

Less discount or rebate allowed if any .....
Cash down payment proposed .....
Unpaid balance .....
Less amount to be paid by the party .....
Loan asked for .....
Finance charge @.. % p.m. for....years .....
Face amount of loan required .....
Terms....payments at Rs.....each with a balance payment of Rs.....at the end

8. The party shall furnish the bank with such financial statements and data at such times and with such certifications as the bank may require. The bank may at any time inspect the party's books and accounts.

9. The applicant—party—understands that. if this loan is granted, the bank will deduct from the face amount thereof a finance charge at....per annum per Rs. 100.

CASE STUDY ON THE TRANSFER AND EXPANSION OF THE FOUNDRY AND FORGE DIVISION OF THE VICTORY MACHINES LTD.

A. S. JAGANNADHA RAO

Introduction

This Case Study pertains to the transfer of foundry and forge unit of *The Victory Machines Ltd.* from Malaikkudi to Kavanoor and its expansion and modernization. The study outlines the complications that arose in the planning and execution of the new foundry and forge division. The impact of unforeseen circumstances on decision-making is underlined in this case.

The Victory Machines Ltd. was founded as a joint stock company in the private sector with an authorised capital of Rs. one crore in 1943 in the Mayurpura State with technical assistance from Atlantis for manufacturing light speed cutting tools and measuring instruments. It was managed by a Board of Directors and the day-to-day affairs were looked after by the Managing Agents under the supervision of the Board. It became a public enterprise in 1948, consequent upon the Government of Mayurpura, subscribing 61 per cent of its paid-up share capital. The company continuously incurred losses and these in 1958 aggregated to Rs. 30.6 lakhs. It was at this juncture that the Government of Mayurpura sought the help of the Central Government to rehabilitate the company. This request was granted by the Central Government in June 1958. Two consequences flowed from the participation of the Central Government in the capital of *The Victory Machines Ltd.*

1. In order to wipe out the previous losses amounting to Rs. 32.89 lakhs, the face value of fully paid equity shares was reduced from Rs. 50 to 25.

The Managing Agency system was discontinued and the *Victory Machines Ltd.* came under the administrative control of the Ministry of Steel and Heavy Industry. The affairs of the company are at present managed by a Board of Directors,

comprising the representatives of the Government of India, the Government of Mayurpura and public shareholders. The Managing Director is the Chief Executive and the administrative head of the company. He is assisted by a Secretary, Financial Adviser and Chief Accounts Officer, Marketing Manager, Commercial Manager, and two Divisional Managers respectively in charge of the machine tools division and the foundry and forge division.

Employment

There were 1734 persons on the pay-roll of *Victory Machines Ltd.* as on November 1, 1968. The break-up was as under :

TABLE 1

Category	No.
Managerial (upward of Rs. 600)	14
Supervisory (Rs. 180-599)	203
Skilled	226
Semi-skilled	595
Un-skilled	210
Watch and Ward	84
Clerical	127
Others	275
TOTAL	1734

History of Production

In the earlier stages, the pattern of production of the company underwent diversification and expansion to meet the changing demand arising out of vast changes, taking place in the industrial activity in the country. The products of the company had to be rationalised and the items were divided into five groups, *viz.*, machine tools, machine tool accessories, precision tools, auto and diesel-parts and railway components. The auto and diesel parts and railway components were in great demand and were considered vital to engineering industry. There had been some increase in production and productivity as shown in Table 2.

TABLE 2

Year	Value of production Rs. in lakhs	Per capita production in Rs.
1959-60	59.00	3,552
1960-61	59.94	3,659
1961-62	61.66	3,760

History of the Forge and Foundry Unit

To meet *Victory's* own requirements, a cast iron foundry was started in 1946 as soon as the main workshop at Malaikkudi was ready. The foundry equipment included overhead cranes and other handling devices as well as boxing equipment, and a laboratory. The foundry site at Malaikkudi was situated in a marshy place where the sub-soil water, specially in the rainy season, prevented the production of heavier casting by floor-moulding. There were two moulding machines and two cupolas in the foundry at Malaikkudi.

In 1949, the management decided to instal a forge shop and a small beginning was made with a single hammer. In 1959, anticipating an acceleration in the demand for forgings, a number of press and other forging equipments were ordered and a separate forge shop was put up at Malaikkudi. The production of railway duplicates such as screw couplings was started during that year. During these 15 years the Victory Forge Shop was considered to be a premier factory in the whole of India. Although it was not a part of the main activity at the *Victory's*, it had developed into a bread and butter item. The production of the forge shop was of the order of 90/100 tonnes per month and the value of the annual production was estimated at Rs. 30 lakhs. The output of the forge shop includes railway duplicates, automobile and diesel parts such as crankshafts, nozzle holders, camshafts and fly-wheels.

The production statistics pertaining to the forge shop would be of interest (Table 3).

The Victory Machines Ltd. had surplus labour in some categories of jobs such as fitters, chargemen and moulders. The problem of surplus labour was further aggravated after 300

persons were employed in 1959 in anticipation of an expansion programme which, however, did not materialise. The Company had also to face the problem of accumulated losses even after reducing the share value for writing off the past loss. The carried-forward loss was still Rs. 4.64 lakhs in 1958-59.

TABLE 3

Period	Auto and diesel spares (in lakhs)	Railway duplicates (in lakhs)
1957-58	4.4	21.91
1958-59	6.59	27.07
1959-60	9.56	90.81
1960-61	6.17	15.02

The recognised union, namely Victory Machines Employees' Union had an overwhelming majority support of the workers and continued to enjoy the confidence of the management. But the establishment of another rival union resulted in creating frequent tensions. The un-recognised union, namely Victory Machines Mazdoor Sabha had, however, considerable following among the forge and foundry shop employees who numbered about 450. This splinter union often disturbed the industrial climate by finding fault with the actions of the management.

The company acquired 316 acres at Melattur through the good offices of the Mayurpura State Government for implementing some of the expansion programmes under contemplation in 1958-59 and for the construction of a new factory.

Transplantation and Expansion of the Forge and Foundry Shop

Prior to the launching of the Third Five Year Plan, the Government of India succeeded in getting a credit of Rs. 14 crores from Utopia for developing industries in the country. On May 7, 1960, an agreement in economic co-operation between the Government of India and the Government of Utopia was entered into. Consequently, the Government of India decided in principle to allot one crore rupees out of their Utopia credit of 14 crores to *Victory Machines Ltd.* for their expansion programmes. A Consulting Engineering Organisation of the Utopian Government sent experts to inspect the facilities

available at *The Victory Machines Ltd.* The Utopian foundry experts felt that by spending ten per cent more on capital expenditure, the foundry could be so designed as to be capable of doubling its annual capacity.

The Heavy Industries Engineering Department of the Central Government desired that the *Victory* management should give urgent consideration to the question of utilisation of the Utopian credit and communicate their views within a week. Consequently, the Managing Director with the help of his departmental colleagues undertook a study of the Utopian project report with the object of transferring the forge and foundry units to Melattur at the earliest possible moment and simultaneously modernising and expanding the same with the help of the Utopian credit in the light of recommendations contained in the project report. The financial implications of the forge and foundry project were as shown in Table 4.

TABLE 4

Item	Investment (Rs. in lakhs)	Production (Rs. in lakhs)
Land and Development	15.00	—
Buildings	30.00	—
Equipment		
Forge	55.50	135.00
Foundry	30.00	64.00
Training expenses and expenses of Utopian technicians	4.50	—
Working capital	36.00	—
	171.50	199.00

It would be seen from the Table that the production investment ratio of more than 1 : 1 was anticipated. The Managing Director requested the Board to approve of the projects so that the Union Government might be approached for their sanction.

The Board met on June 22, 1962 to consider the note on the subject and felt that for a scheme of that magnitude, a note should be circulated before hand and taken up at the next meeting

of the Board, giving details of the manner in which the report was examined, together with the results of the examination, with particular reference to :

(*a*) marketability; (*b*) the quantum of machinery; (*c*) the prices of machinery; (*d*) the ancillary facilities that would be necessary at Melattur; and (*e*) economics of the project.

Further, the Managing Director was requested by the Board to obtain the opinion of other technical experts on the Utopian scheme by approaching one of the other public sector projects which was getting Utopian credit.

While the proposal for expansion of the forge section with Utopian assistance was pending with the Government of India, a new development took place at Malaikkudi, the place where the works stood. The hammer in the forge shop at Malaikkudi broke down. The Managing Director brought a proposal before the Board for the immediate purchase of one Utopian hammer and trim press which should be installed at Malaikkudi site, at a cost of Rs. 9 lakhs. He also mentioned to the Board that to plan out a proper forge shop now itself and stabilise production at 4000 railway links per month and about Rs. 2.00 lakhs of forgings, would cost additionally Rupees 11.00 lakhs, making a total of Rupees 20 lakhs which would later form part of the new forge shop as planned under the Utopian scheme. He requested the Board to authorise the immediate execution of the first stage of the forge shop proposal to be ready by May next year at Melattur and to sanction an additional expenditure of 11 lakhs of rupees for the scheme.

With regard to the Managing Director's proposal for installing the new hammer and shifting the entire forge shop at Malaikkudi with old machinery to Melattur the Board felt that it would be a desirable proposition, provided the under-mentioned factors were favourable :

(*a*) It should be a project wholly separate from the big Utopian project;

(*b*) The State Government must be willing to give all the facilities;

(*c*) Power should be actually available; and

(*d*) On examination, it should be found that there are no increases in overheads due to separation.

As it would take some time to secure satisfactory replies on (*b*) and (*c*) above, the Board decided that the new Utopian hammer should initially be installed at Malaikkudi even though it might involve an avoidable expenditure of about Rs. 75 thousands on re-installation, if, later the hammer had to be moved to the Melattur site. The Board felt that the hammer should go into production immediately after supply.

The management requested the Civil Engineer to estimate the cost of improvements that would be necessary if it was desired to rehabilitate the forge and foundry shop at Malaikkudi in the *Victory Machine's* compound. The Engineer estimated that the cost would be around Rs. 1,14,300.

The Members of the Board inspected the forge and foundry sections in the *Victory Machine's* compound. During their visit the Managing Director apprised them of the steps that would have to be taken and the expenditure that would have to be incurred if the new Utopian hammer was to be installed at Malaikkudi and the foundry rehabilitated to continue un-interrupted production. Arising out of this, the requirements of these two shops after excluding the possibility of the larger Utopian aided project was discussed by the Board. The Chairman of the *Victory* Board apprised his colleagues of the result of his discussions with the Utopian Engineer. According to the Utopian engineer, the present forge shop at Malaikkudi could not operate economically and efficiently until the shed was re-built and adequate facilities were provided, including the provision of an overhead crane so as to maintain the hammer properly and achieve economic material handling. Further, the Utopian Engineer advised that the roof of the shed would have to be completely removed and replaced with new sheets. The Chairman and Board Members felt that the implementation of the Utopian Engineer's suggestions would entail interruption of production for a period of about three to four months and a loss of approximately Rs. 8 to 10 lakhs, of turnover. On December 14, 1962, the Board, after careful consideration of all aspects of the situation, came to the conclusion that it would be beneficial to the company, if the forge shop was transferred immediately to a new site, as such a move would ensure continuity of production as well as provide scope for further expansion of the forge shop which was a very paying line. The Managing Director was accordingly

authorised to take immediately such steps as were necessary to transfer the forge shop with the new Utopian hammer as the nucleus of the new factory to Melattur.

Transfer and Expansion of the Foundry and Forge shops

It has already been mentioned that the *Victory Machines Ltd.*, had, on the basis of the Utopian Project Report submitted in the middle of 1962, envisaged the forge shop expansion at a new site in two phases; phase one, involving an expenditure of Rs. 20 lakhs including Rs. 6.50 lakhs in foreign exchange from the Utopian credit and phase two, involving an expenditure of Rs. 54.10 lakhs, including Rs. 25 lakhs in foreign exchange. The details connected with phase one and phase two expansion of the foundry and forge are division shown in Table 5 and 6.

TABLE 5

	Rs. in lakhs
1. Expenditure :	
(*a*) Written down value of the machinery existing in the Forge shop	13.23
(*b*) Expenditure under Phase I (almost completed)	20.00
(*c*) Expenditure under Phase II	54.10
Total cost of expansion	87.33
2. Anticipated production if the expansion is completed	120.00 per annum
3. Anticipated operating expenses including depreciation	90.00 per annum
4. Anticipated gross profit	30.00 per annum
5. Anticipated capacity of the Plant in terms of Forgings	3,000.00 tonnes per annum

It may be recalled that the Board authorised that the Forge and Foundry should be transferred to Melattur where a site of 316 acres was already in the possession of the company.

TABLE 6

OPERATING RESULTS ON COMPLETION OF PHASE I AND PHASE II

	Rs. in Lakhs	
	Phase I	I+II Phase
Production	50.00	120.00
Expenses		
1. Raw material	17.00	40.00
2. Labour and incentives	7.50	12.00
3. Engineering and Supervision	3.00	5.00
4. Depreciation on Assets	4.50	10.00
5. Indirect materials and factory overhead and commercial expenses	8.00	18.00
	40.00	85.00
Margin of profit	10.00	35.00

When the preparatory work in connection with the development of the Melattur site was taken on hand, difficulties which were not anticipated before suddenly arose. It was found that the State Government had no plans to develop that site within the Third Plan period. Moreover, a sizeable part of *Victory Machines* land at Melattur was required to meet the essential needs of the railways. Consequently, the company abandoned the Melattur site and through the good offices of the State Government acquired and took possession of another plot of land, admeasuring approximately 200 acre in Kavanoor to the west of the city.

While the management contemplated shifting of the forge shop to Kavanoor and expanding production with the help of the Utopian hammer which was expected, certain new developments cropped up. Firstly, it became clear that the State Government had made a deliberate decision to go slow with the provision of facilities at Kavanoor because of certain external factors. Secondly, the company was informed that the Government of India had decided to divert the Utopian credit to another

TABLE 7

FOUNDRY AND FORGE INVESTMENT PROGRAMME UNDER THE CONTEMPLATED EXPANSION

Figures in lakhs of Rs.

Item	Capital block at net value as on 31-3-1962 including Commitments already entered into	I phase inescapable fringe development	Total	II Phase with Utopian Collaboration	Total
1. Machinery and Tooling	6.13	9.00	15.13	31.00	46.13
2. Die and Tool room facilities	4.10	—	4.10	5.00	9.10
3. Cranes, Hoists, racks, etc.	2.18	1.00	3.18	4.50	7.68
4. Cost of Training Staff abroad including their pay	—	—	—	0.60	0.60
5. Cost of Foreign technicians	—	—	—	1.00	1.00
6. Land and development buildings during power distribution	—	10.00	10.00	11.00	21.00
7. Central office and sales department	0.82	—	0.82	1.00	1.82
	13.23	20.00	33.23	54.10	87.33
Production	30.00	20.00	50.00	70.00	120.00

public sector unit, and hence it would not be possible to finance the Foundry Forge project under the Utopian credit.

By this time, the *Victory Machines Ltd.* had carried out the transplantation of the foundry from Malaikkudi to Kavanoor. A sum of Rs. 3 lakhs had been spent on adding equipment like cupolas and a sandmuller. Besides, the first phase of setting up a new forge shop and fringe developments associated with the first phase costing Rs. 20 lakhs had been carried out by the company out of its own resources.

The contemplated second phase which was estimated to cost Rs. 54.10 lakhs with a foreign exchange component of Rs. 25 lakhs was still hanging fire.

The Administrative Ministry did not clear the second phase of the implementation because of certain doubts about the market for forgings. The company was asked to submit fresh proposals.

The Managing Director sent a memorandum to the Ministry of Heavy Industry in which he reaffirmed that there was a great dearth of forging capacity in the country. He pointed out that as against a total requirement of 5 lakhs tonnes forging per annum, the present effective capacity in the country was only 3,25,000 tonnes. He underlined that a decision was taken by *Victory Machines Ltd.* to expand their capacity from approximately 1 thousand tonnes of forgings to 4 thousand tonnes per annum, and this was agreed to in principle by the Government of India earlier, when the project was included in the Utopian credit. He also drew the attention of the Ministry to the fact that for some unknown reasons the original Utopian proposal had been dropped. The Managing Director made out a strong case for the immediate sanctioning of the second phase.

While the matter was pending with the Department of Heavy Engineering, the Government of India appointed an Expert Committee in November 1963, to examine the future lines of production of *Victory Machines Ltd.*, with particular reference to the expansion of the forging capacity. The Committee recommended the separation of the foundry and forging from the main body of the company and the creation of additional forging capacity with a view to meeting the large demands for industrial components from railways and others dealing in diesel and auto parts. The Department of Heavy

Engineering accepted the recommendations of the Expert Committee and conveyed the sanction of the project to the *Victory Machines Ltd.*

Reference has already been made to the withdrawal of the Utopian credit. The Finance Ministry later wanted to know from the Managing Director on January 13, 1964, whether the proposed expansion could be carried out with imports from Atlantis under an Atlantis credit under the Trade Plan. On January 20, 1964, the Managing Director informed the Finance Ministry that Atlantis credit was suitable for the expansion of the forge shop. The Department of Economic Affairs, in a communication dated June 24, 1964, agreed to the proposal of *Victory Machines Ltd.* for the import of capital goods to the tune of Rs. 25 lakhs from Atlantis to meet the foreign exchange requirement of the Forge and Foundry Project. On August 29, 1964, the Board accorded the approval for the implementation of phase two expansion of the forge unit at a total cost of Rs. 54.10 lakhs.

As regards the resources for financing the second phase expansion, the Board decided that as much of the project as possible should be financed from the internal resources of the company and that the Government of India should be approached for the rest. In this context, the Board noted that the Government of India had approved the principle of 1 : 1 equity loan ratio and, therefore, it was felt that there was further room for borrowing from Government to the tune of Rs. 64 lakhs. The Board felt that loans to finance capital projects should be acquired from commercial banks only as a last alternative.

Further Complications

While the phase two expansion was awaiting clearance from the Heavy Engineering Department, the administrative control of *Victory Machines Ltd.,* was transferred from the Department of Heavy Engineering to the Department of Defence Production in December 1963. It was also decided simultaneously that the decision about the second phase expansion should be taken by the successor ministry. The Ministry of Economic Affairs had already agreed that Rs. 25 lakhs, the foreign exchange component of the total investment of the second phase of 54.1 lakhs, should be provided out of the trade agreement with Atlantis. The management of the *Victory Machines Ltd.*

wrote to the Ministry of Defence to obtain the concurrence of the Ministry of Finance to the proposal of phase two expansion of the forge shop. As the new administrative ministry wanted full background information about the forge and foundry expansion under phase one and phase two, a detailed background report enumerating the genesis, the completion of the first phase and the complications that arose consequent upon the withdrawal of the Utopian aid was furnished on December 1, 1964. It was also pointed out that the Department of Technical Development were convinced that the forge expansion of *Victory Machines Ltd.*, should be taken up. The management of *Victory Machines Ltd.* also stressed that there was an acute shortage of capacity of quality steel forgings in the country with the result that orders exceeded several times the value of the present output. The administrative ministry was requested to to obtain the concurrence of the Finance Ministry for the implementation of the second phase expansion. On December 24, 1964, the Under Secretary to the Government of India in the Ministry of Defence conveyed the sanction of the President to the proposals for the expansion of the forge shop under phase two, involving an outlay of Rs. 54.1 lakhs, including Rs. 25 lakhs in foreign exchange.

It will be interesting to recall that phase one of the expansion of the forge shop was completed by April 1965. Reference has already been made to the uncertainties that surrounded the clearance of the foundry and forge expansion at Kavanoor. The implementation of the decision to initially transfer the existing foundry and forge shop from Malaikkudi to Kavanoor called for a host of other decisions, particularly with regard to the setting up of a skeleton organization at Kavanoor to look after production and construction of new facilities in connection with the expansion, the transfer of personnel, and the delegation of powers to the new divisional manager.

In order to put on a formal basis the arrangements that were made from November 1, 1962 to January 1, 1963 in connection with the implementation of the Board's decision to establish a second factory at Kavanoor, the following steps were taken :

1. A project officer was appointed and he was required to work under the Managing Director and report to the latter on all matters connected with the Project. Four

ministerial posts and a post of Technical Office Superintendent were also sanctioned.

2. A Clerk of Works was appointed to look after the Civil Engineering construction relating to the Kavanoor Project. He was directed to work under the general supervision of the Project Officer. The Technical Superintendent of the Foundry Forge Unit at Malaikkudi was transferred and was made responsible for the technical operations at the new site.
3. The old foundry and forge shop shed was dismantled and auctioned.
4. Consequent upon the transfer of the Foundry Forge Division to Kavanoor and expansion, the existing employees in those two sections at Malaikkudi were transferred *en masse*.
5. While there were certain cadres such as foundry-man and blacksmith which were distinct, there were many cadres common to both establishments. The company, therefore, decided to transfer some of the surplus labour in the machine-tool Division to the Kavanoor foundry and forge Division.
6. Since the new factory was located somewhat away from the city centre with attendant minor inconvenience, the Company decided to pay a cycle allowance of Rs. 15 per month to all those transferred from Malaikkudi to Kavanoor.
7. The workers in the old factory were given an option to choose service at either of the two locations and the following categories were excepted.
   - (*i*) Blacksmiths
   - (*ii*) Welders
   - (*iii*) Firemen
   - (*iv*) Hammer operators
   - (*v*) Compressor operator
   - (*vi*) Diesetters
   - (*vii*) Moulders.
8. It was decided that, after the exercise of option by the employees, separate lists of seniorities should be maintained at both the divisions.

Consequent on the organisation of the two major homogeneous divisions in the company, namely the Machine Tool Division at Malaikkudi and Foundry and Forge Division at Kavanoor, some changes were made in the then existing procedures in so far as they mainly related to the accounts department.

1. Accounting that was done in the Financial Adviser's Section was transferred to the two divisions in order to make the divisional accounts complete in all respects. The consolidation of the two divisions' accounts was made the responsibility of the central office.
2. The Divisional Managers were required to make all disbursements by cheque or in cash as may be necessary.
3. The Divisional Managers were given financial powers to make purchases of raw materials and components required by their divisions. The stores function also was bifurcated.

Thus the setting up of a new division resulted in decentrlisation of functions as well as powers. Each division was placed under the direct charge of the Divisional Manager. They were charged with the responsibility of preparation and submission of final accounts to the Financial Adviser and Chief Accounts Officer, apart from submitting to the top management such other information as was found necessary from time to time.

Problems faced by the Kavanoor Division in the process of transfer and expansion

According to the Divisional Manager of the Kavanoor Foundry and Forge Division, the following were some of the problems that confronted the new division while it was in gestation.

1. The Divisional Manager had to attend to the twin problems of erecting the new machinery and producing simultaneously with old machinery that was transferred from Malaikkudi. The needs of erection and production gave rise to problems of coordination and particularly in arranging the sequence of activities. The management had to resort often to local purchase of components in order to stick to the production schedules. This, however, resulted in overstocking and excess payments.

2. The Foundry and Forge Division at Kavanoor had also created problems for the rank and file workers, especially with regard to their transportation. As the area was not adequately served by the suburban bus service, absenteeism shot up, despite the financial incentive of 15 rupees given by the management to the transferred employees.
3. Phase two expansion could not commence during 1965-66 due to delay of over one year in the shipment of Atlantis machinery.
4. The site lacked canteen and other facilities and consequently labour morale tended to be low.

THE PRICE OF POWER FOR THE KORBA ALUMINIUM PLANT

DEVINDER NATH

This case-study presents the story of the negotiations regarding the rate at which electric power would be supplied to the proposed Korba Aluminium Plant in Madhya Pradesh. The parties to the negotiations were : the Madhya Pradesh Electricity Board, which was to supply the power, the Madhya Pradesh Government, which was to make long term commitments about the quantity and rate of power to be supplied, the Union Government which was sponsoring the project as a public sector venture, and the Bharat Aluminium Company Ltd., the public sector company which was to establish and operate the proposed plant. The main focus of the study is on the considerations—that go into locational decision-making and the process by which the differing view-points of various parties to the issue are reconciled.

The Korba-Amarkantak region in Bilaspur and Shahdol districts of Madhya Pradesh has vast deposits of high grade bauxite and extensive coalfields, which can be worked at comparatively low costs. In April, 1958, the Madhya Pradesh Government appointed a Committee to examine the possibility of the location of an aluminium plant in this area. The Committee felt that with the increasing demand for aluminium and the possibility of producing it at a cheap rate by utilising the bauxite and coal, found to occur in close proximity and making use of the electric power potential, there was a very strong case for the establishment of an aluminium plant in the region. In February 1959, the Madhya Pradesh Government sent to the Union Government the information collected by the Committee and strongly recommended the setting up of an alumina[1] plant of an initial capacity of one lakh tons per annum and an alumi-

[1]Bauxite, the ore containing aluminium gets converted, in the first first stage, into alumina, an oxide of aluminium which can later be converted into aluminium.

nium plant of 20,000 tons with provision for a five or six-fold expansion to meet the increasing demand for aluminium in future. The Union Government replied to the State Government in March 1959 that during the Third Plan period, the claims of the sites in Madhya Pradesh and other States for an aluminium plant would be "considered in the light of available resources and the demand for aluminium." The concluding paragraph of the Government of India's letter was as follows :

> "Since cheap power is an important factor in this industry, there would have to be a definite assurance that it would be available at reasonable rates and without any subsidy from the power plants under construction or envisaged under the Third Plan. The current thinking is that aluminium production is not likely to be economic unless power can be supplied at Rs. 150 KW/Year. It is hoped that the power cost in Madhya Pradesh would be able to stand the test of these essential requirements when specific proposals come up for examination under the Third Plan."

The State Government continued pressing its claim for an aluminium plant in Madhya Pradesh. In August, 1961, a team of Hungarian experts visited the country at the invitation of the Union Government to examine the possibility of setting up an alumina/aluminium plant. They were of the view that Korba in Bilaspur district was the most suitable site for the location of the plant. While the collection and analysis of geological data required by the Hungarian team were taken in hand by the various agencies, negotiations were started between the Union Government and the State Government regarding the rate at which power would be supplied to the aluminium plant.

At a meeting held in November 1962, between the representatives of the Ministry of Commerce and Industry of the Union Government, the Planning Commission and the Madhya Pradesh Electricity Board, it was stated on behalf of the MP Electricity Board that the requirements of power, which were estimated at 75 KW by 1967-68 for a 25,000 ton aluminium smelter, would be met by them. The Chairman, MP Electricity Board also agreed to supply power for the alumina/aluminium plant at Rs. 180/- per KW/Year. The rate of Rs. 180 was based on the pit-head rate of approximately Rs. 18 per ton of coal and it was made clear

on behalf of the M.P. Electricity Board that the power rate quoted was liable to escalation on the basis of the pit-head rate of coal. At this meeting, it was stressed that no duty, tax or levy of any kind should be payable in addition to the rate of Rs. 180.

When the MP Government was asked to confirm the rate of supply of power indicated by the MP Electricity Board, the State Government, in their reply to the Union Government in March 1963, referred to the view expressed by the Hungarian team regarding the possibility of producing aluminium at the international price by working the coal mines, power house, bauxite mines and alumina/aluminium plant in an integrated manner, and wanted the Union Government to take a decision on this important point.

The Union Government did not find it possible to have an integrated complex for the mining of coal, generation of power and production of alumina/aluminium. In December 1963, the Ministry of Industry wrote to the State Government to confirm that, in accordance with the assurance given by the Chairman, MP Electricity Board at a meeting in November 1962, power would be made available to the aluminium plant at a rate of Rs. 180 per KW/Year and that the MP Government would agree not to levy any additional duty or tax.[2]

The State Government wanted the MP Electricity Board to communicate its willingness to supply power for the aluminium plant at Rs. 180 per KW/Year. In January 1964, the MP Electricity Board confirmed that it would be in a position to make available, from 1967-68 onwards, 75 MW of power at 90 per cent load factor at a rate of Rs. 180 per KW/Year. According to the MP Electricity Board, this rate was based on the pit-head rate of approximately Rs. 18 per ton of coal, which would increase with the increase in the price of coal.

Information collected from the Central Water and Power Commission and other States showed that in different parts of the country, power was being supplied to aluminium industry at the following rates. For facility of comparison, the Madhya Pradesh figures are also included in this table.

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[2]Most States levy such a tax/duty on electric power consumption; so did the M.P. Government.

TABLE 1

Name of State	Quantum of power Supplied MW	Rate KW/Yr.	Equivalent Rate in NP. KWH. at 90% Load Factor	Electricity duty payable to State Govt. in NP/KWH.	Overall rate in NP/KWH
Madhya Pradesh	Nearly 75 (to be supplied)	Rs. 180/-	2.28	.8*	3.08*
Kerala	14	First 7000 KW @ Rs. 100/-	1.26	.2	1.46
		Rest @ Rs. 105/-	1.33	.2	1.53
Alwaye	—	Rs. 100/- to Rs. 135/-.	1.21 to 1.71 1.52	.20 to .25	—
Madras	27	Rs. 120		.076	1.596
Mysore	60 to 70	Rs. 125 to Rs. 142/-	1.58 to 1.8	.5	2.08 to 2.30
Kerala				.5	
Orissa	First 25	Rs. 120 to Rs. 135	1.52 to 1.71	15% 0.224	1.744 to 1.934
	Next 15	Rs. 135	1.71	0.257	1.967
	Next 23	Rs. 165	2.09	0.314	2.404
Maharashtra	55	Rs. 166.5	2.1	0.16	2.26
Uttar Pradesh	55	Rs. 159	1.99	—	1.99
West Bengal	15	Rs. 150 First two years	1.89	1 NP	2.89
		Rs. 130 during third year.	1.64	1 NP	2.64
		Rs. 120 fourth to ninth year	1.52	1 NP	1.52

*The rate applicable to all consumers; subsequently entirely foregone by the M.P. Government for the proposed aluminium plant.

The Planning and Development Department of the State Government, which examined the case, felt that the basic rate at which power was supplied in other States for the aluminium industry, was much lower than Rs. 180 per KW/Year. Even including the electricity duty in other States, the overall rate was below Rs. 180 per KW/Year except in West Bengal and in a very small measure in Mysore. In West Bengal, however, the power taken by the aluminium plant was only 15 MW and the aluminium factory at Asansol was meeting most of its power requirements from its own thermal plant. Considering all these factors, the Planning and Development Department was of the view that there was a strong case for not charging electricity duty at the normal rate of 0.8 np per KWH, the incidence of which on 75 MW would have been Rs. 52.50 lakhs per annum. The Planning and Development Department proposed a duty at 25 per cent of the normal rate, *i.e.*, a 0.2 np per KWH. It was calculated that if this duty of 0.2 np was added to the basic rate, the overall rate would become 2.48 np per KWH. This rate would no doubt be higher than the rate in all other States except West Bengal, but the Planning and Development Department hoped that it would be acceptable to the Union Government. It was felt that the rate should operate only for a period of five years after the start of production and should be reviewed after five years. The proposal of the Planning and Development Department was accepted by the Electricity and the Finance Departments of the State Government. After approval by the Chief Minister, the State Government wrote to the Union Government, Ministry of Steel, Mines and Heavy Engineering in March 1964 that it would be possible to supply 75 MW of power at 90 per cent load factor from 1967-68 onwards, that the rate of power would be Rs. 180 per KW/Year and that the State Government would charge electricity duty on the power supplied at the revised rate of 0.2 np per KWH, which was only 25 per cent of the normal rate. It was added that the rate quoted by the M.P. Electricity Board was based on the pit-head rate of approximately Rs. 18 per ton for the coal and would be affected by a rise in the pit-head rate of coal.

In June 1964, the Union Department of Mines and Metals informed the State Government that it had been decided to take up implementation of the Korba Aluminium Project upto the

alumina stage with Hungarian assistance. As a first step, an agreement was entered into between the Union Government and Messrs. *Chemokomplex* of Hungary for the preparation of a detailed project report upto the alumina stage. The National Industrial Development Corporation (NIDC) was also associated with the preparation of this Report. In January 1965, a message was received by the State Government from NIDC that a Hungarian team would be in Delhi for discussions within a few days and that it was necessary to have a decision of the State Government that power would be supplied for the alumina/aluminium project at Korba at a maximum rate of Rs. 180 per KW/Year without any charge on account of electricity duty.

The State Government reconsidered the question, and in February 1965, it informed the Union Government of its willingness to forego electricity duty on the power to be supplied to the integrated alumina and aluminium plant at a rate of Rs. 180 per KW/Year, but added that this rate would be liable to review at a later stage, if the pit-head price of coal went up or if the price of aluminium increased substantially or if the factory started making sufficient profits.

In a subsequent communication, it was stated by the State Government that the power supply rate quoted by the MP Electricity Board would not be made applicable if an alumina plant, requiring only 4-5 MW of power were to be set up. Power supply to the alumina plant, as clarified by the MP Electricity Board and the State Government, would be on the basis of the Board's standard HT tariff, which were as follows (assuming a demand of 5 MW) :

Load factor	Overall average rate Ps/Unit.
60%	8.235
70%	7.990
80%	7.807
90%	7.664

The State Government gave all assistance to the Hungarian Team and NIDC in the preparation of the detailed project report for an alumina plant but they made no secret of their disappointment over the decision of the Union Government to have a truncated project at Korba for producing only alumina. The Chief Minister wrote a letter to the Union Minister for Industry

in July 1964, pointing out the advantages of having an integrated alumina and aluminium plant at Korba.

In March 1964, the Chief Minister discussed the matter with the Union Minister of Steel, Mines and Heavy Engineering, and he was given the impression that action would be taken to set up an aluminium plant at Korba after finalization of an agreement for an alumina project with the Hungarians.

In February 1965, the Chief Minister again wrote to the Union Minister of Industry, reiterating the advantages of an integrated alumina/aluminium plant at Korba.

The Union Minister of Industry replied that it was still Government's intention to set up a smelter to manufacture 30,000 tons of aluminium and also to undertake fabrication of the aluminium ingots at Korba. The project was to be an integrated one, but Hungarian assistance was being taken up to the stage of alumina only. The balance of works, *i.e*, smelter and fabrication capacity was, proposed to be established with other appropriate foreign collaboration which was being sought separately.

Later, in the course of 1965, the USSR Government agreed to make available, financial and technical assistance for setting up an aluminium plant and fabrication unit at Korba.

In January 1966, the Union Department of Mines and Metals informed the State Government that it was intended to set up an integrated aluminium plant at Korba (including an alumina plant, a smelter, and possibly a fabrication unit). The alumina plant would have a capacity of 2 lakh tons of alumina per annum. The smelter would produce 1 lakh tons of metal. For the aluminium plant and the smelter, a total of about 250 MW of power would be required. It was mentioned in the Union Government's communication that every effort would be made to see that there was a minimum time lag between the commissioning of the alumina plant and the smelter and, therefore, it was desired that the same power rates should be applicable to both the components of the integrated plant as well the fabrication plant, if it was located at Korba. The Department of Mines and Metals wanted a commitment from the State Government on the following points :

(*i*) The MP Electricity Board would be in a position to supply 250 MW of power.

(*ii*) There would be a single rate with no distinction in regard to power supplied to the alumina plant, the smelter and the fabrication plant, though their commissioning may take place at slightly different times.

(*iii*) There would be exemption from the electricity duty on power supplied to all the components of the integrated plant.

(*iv*) Power would be supplied at a fixed economical rate for the integrated aluminium plant so as to make the project viable. The Ministry felt that even with the power rate of Rs. 180 per KW/Year (about which an assurance was given by the State Government earlier in regard to 75 MW), the economics of the project would be marginal.

(*v*) The power rates should not be open to revision from time to time on the basis of increase in the price of aluminium and the profits earned by the aluminium plant and a long-term contract for the supply of power to the Korba Plant should be made.

The MP Government wanted the views of the MP Electricity Board on the points contained in the letter of the Ministry of Steel, Mines and Metals. According to the MP Electricity Board, the rate of Rs. 180 per KW/Year indicated previously was based on the following considerations and assumptions :—

"(*a*) The aluminium plant capacity then under consideration was 20,000 tons, which would require a maximum of 75 MW of power and an average of 50 MW, representing less than 10 per cent of our full capacity, which when our III Plan works, *e.g.*, Korba, Satpura, Rana Pratap Sagar, Kotah, etc. are completed, will amount to over 750 MW.

(*b*) Therefore, the capital cost of one 50-MW set only should be booked to the aluminium plant. The additional costs on the remaining 75-50=25 MW, the entire standby capacity and facilities, such as water supply, township, roads, railway siding. communications, maintenance costs and wages and salaries of the operation and maintenance staff and miscellaneous expenses should and could be charged to the consumers of the remaining 90 per cent

power, without making their tariffs prohibitive or even unduly burdensome.

(*c*) The average thermal value of the coal was assumed to be 7000 BTU and its cost Rs. 18 per ton (not per tonne as stated in the Government of India's letter) delivered to the Power House."

The Electricity Board felt that the changed position was as follows :

"(*a*) The power demand now indicated for the 100,000 ton Plant is 250 MW, *i.e.*, 33 per cent of the capacity in 1971.

(*b*) To meet this demand, 2×140 or 3×100 MW sets at an estimated capital cost of Rs. 30-35 crores may have to be added to the Korba Thermal Station, because, according to our load forecasts, by 1971-72, the available capacity is expected to be absorbed by other consumers. If this is to be accommodated in our Fourth Plan, vital projects like Narmadasagar may be adversely affected.

(*c*) Owing to general inflation, the capital cost has risen from Rs. 1,000 to about Rs. 1200 per KW installed. And there is no guarantee that they may not rise further.

(*d*) The average thermal value of Korba coal which was assumed to be 7000 BTU is found to be 6 750 BTU as the result of analyses carried out during the intervening years.

(*e*) The average cost of coal delivered to the power house has amounted to Rs. 21.55 per tonne. This will increase further even at the present rate of supply, because the Manikpur quarry will be three miles further away. The National Coal Development Board (NCDC) is reluctant to hand over the quarries to us and want to raise the price further.

(*f*) The Government of India have recently forced the Electricity Boards and the State Governments to give guarantees to the World Bank that the power industry will earn a minimum return of 11 per cent excluding operation maintenance and depreciation but including $1\frac{1}{2}$ per cent electricity duty on the total

capital, whether on works in use or under construction, by 1969, failing which loan finance will not be made available. If the aluminium industry is exempted from duty 50 per cent additional burden will have to be imposed on other consumers.

(*g*) In accordance with the recommendations of the Venkataraman Committee, the Boards are now prohibited[3] from supplying power below cost to any industry. As would be clear from paragraph 2 above the rate of Rs. 180 per KW/Year at 90 per cent load factor indicated in 1962 was considerably below cost as several items were excluded from the calculations."

The Board, however, made calculations for the cost of generation of 250 MW of load without standby and without addition of the corresponding cost on the existing facilities such as cooling water, township, communications, etc. The capital cost was assumed to be Rs. 1000 per KW, notwithstanding the upward trends. The cost of Rs. 21.55 per tonne was assumed for the coal of 6700 BTU per lb. delivered at the power house. In view of the high working load factor, 10 per cent loss of units in the auxiliaries was assumed. The cost came to Rs. 276 per KW/Year at 90 per cent load factor. (Actually, there was an arithmetical mistake which was detected subsequently and the cost really came to Rs. 286 per KW/Year).

The MP Electricity Board also stated that, if power was supplied at Rs. 180 per KW/Year, the Board would suffer a loss of Rs. 2.5 crores per annum on the basis of the concessional rate of Rs. 270 and of over Rs. 6.1 crores per annum, if the concessions and 11 per cent return were taken into account. According to the Board, this burden could not be saddled on other consumers without breaking their backs.

A point was also made on behalf of the MP Electricity Board about the power costs that the aluminium industry could bear. According to the Board, electricity constituted almost 25 per cent of the cost of production of aluminium. When

[3]The Electricity (Supply) Act stipulated that the Boards shall not, as far as possible, carry on its operations at a loss, taking subventures into account, etc.

the ruling price of aluminium was Rs. 2,000 per ton, it could not afford to pay more than Rs. 500 per ton, *i.e.* Rs. 200 KW/Year for electricity. The then ruling price of aluminium having risen to Rs. 4000/- per ton, the aluminium industry could afford to pay Rs. 1000 per ton, or nearly Rs. 400 per KW/Year for electricity.

Thus the MP Electricity Board undertook to supply 250 MW electric power to the Korba Aluminium Plant on three years' notice, but found it impossible to make the supply at Rs. 180 per KW/Year, the rate indicated earlier.

The State Government Departments, which examined the views of the MP Electricity Board felt that they could not take any risks about the decision, regarding the location of the aluminium plant by proposing a rate of power which might be considered as uneconomical for the plant. At the same time, the State Government could not compel the Electricity Board to suffer heavy losses by supplying power at rates considerably below the primary cost of generation. The State Government felt that the best course was to send the analysis given by the Electricity Board and calculations made by it to the Government of India and the newly formed Bharat Aluminium Company,[4] which was entrusted with the responsibility of establishing the aluminium plant; they should be asked to consider, against the background of the views expressed by the MP Electricity Board, what rate of power was regarded as economical by them. The State Government could then, in consultation with the Union Ministries concerned and the MP Electricity Board, decide how the losses to be incurred by supplying power at that rate could be met. Accordingly, a letter on these lines was addressed by the State Government to the Union Government in June 1966.

In December, 1966, the Union Ministry of Mines and Metals informed the State Government that the Bharat Aluminium Company, which had examined the proposals of the State Government was of the view that the proposed power rates were very high. They pointed out that at the time of the commencement of production in the Korba Aluminium Plant,

[4]Formed around this time to establish and operate the proposed Korba Plant in Madhya Pradesh and Koyna Plant in Maharashtra.

indigenous production of aluminium would have reached a high level and there would be several private sector companies, competing with the Bharat Aluminium Company in the market. These private companies[5] would be enjoying advantageous power rates in comparison with those proposed by the State Government. For example, the Indian Aluminium Company, which would eventually be operating a 100,000 tonne smelter at Belgaum, would be purchasing power at Rs. 150 per KW/Year from the Mysore State Electricity Board. As the public sector company would have no monopoly in the production of aluminium, but would have to operate in a highly competitive market, the Bharat Aluminium Company stated that "the matter should be re-examined by the State Government and the State Electricity Board with a view to offering power rates, which would be comparable to those at which the private sector units were obtaining power, and also to the rate of Rs. 180 per KW/Year at which the Company would purchase power for its other unit at Koyna in Maharashtra." Referring to the possibility of the construction of a hydroelectric project in Madhya Pradesh, such as Punasa, the Company suggested that the State Government and the Electricity Board might consider offering power on the following basis :

(*i*) "The State Government and the Electricity Board, having already offered as late as March 1965, 75 MW of power at Rs. 180 per KW/Year, should not withdraw this offer because the total power requirements have increased. The rate of Rs. 180 per KW/Year should apply to the first block of 75 MW and any other rate should be applicable only to the balance of the power requirements of the Company.

(*ii*) For the balance of about 185 MW, the long-term rate should be approximately Rs. 200 per KW/Year.

(*iii*) Notwithstanding the possible fact that the hydro-electric stations may be put into commis ion at a subsequent date, the Company request that the rate of approximately Rs. 200 per KW/Year may be made

[5]Already established.

applicable from the very first year of operation of the smelter, *i.e*, 1970.

(*iv*) In case, it is not possible for the Electricity Board to offer the above rate from 1970 onwards, the Company will be prepared to purchase power for the initial period of operation (not exceeding 3 years in any case) at the rate of Rs. 260 per KW/Year. Thereafter, that is, after the expiry of this initial period, the rate of power will be Rs. 200/- per KW/ Year.

(*v*) The Comp ny feel that on the Board's own calculations, the rate of power should be Rs. 260 per KW/Year and not Rs. 276/ per KW/Year.

(*vi*) The State Government should irrevocably assure that the power rate would be free from electricity duty or any other kind of levy.

(*vii*) The power rates should be firm for a period of 30 years and not subject to variation on any account, *e.g.* actual cost of construction of power stations, actual cost of generation of power, costs and sale prices of aluminium, etc.

(*viii*) The rate of supply of 75 MW of power, which is related to a thermal source may be subject to variation on account of pit-head price of coal. The basis of variation should be agreed upon and embodied in the agreement so that both parties know exactly to what extent the power rate would vary per unit variation of the cost of coal."

The MP Electricity Board's comments on the proposal were that, according to the Board's calculations, the rate for thermal power should be Rs. 286 and not Rs. 260 as indicated by the Bharat Aluminium Company. The rate for the hydro power, according to the Board, would be Rs. 225 per KW/ Year. The Electriciy Board was of the view that they could not be sure when a hydro project could be commissioned and, therefore, the rate of Rs. 286 per KW/Year for thermal power should obtain, not for a period of 3 years from the date of commencement of production in the Plant, but till power was available from a hydro project in the State.

In February 1967, the Union Ministry of Mines and Metals was informed that the MP Electricity Board maintained on the basis of their calculations that the rate of power worked out to Rs. 286 per KW/Year, whereas in the Ministry's communication, this rate was shown as Rs. 260. It was suggested that the technical experts, who had worked out the figure of Rs. 260/- on the basis of the calculations furnished by the MP Electricity Board, might visit the Board's office at Jabalpur and have the discrepancy cleared up.

These discussions, which were held in May 1967, did not prove useful. The Board continued to maintain, on the basis of their figures, that the primary cost of generation of thermal power was correctly calculated by it as Rs. 286/- per KW/Year, while the Bharat Aluminium Company felt that this figure should work out to Rs. 260 per KW/Year. This discrepancy was, however, not of such vital importance as the divergence of views of the Board and the Bharat Aluminium Company regarding the question of the rate to be allowed for the first block of 75 MW of power, the period for which the rate for the thermal power should operate and the rate to be charged for the hydel power.

The State Commerce and Industry Department was anxious to end the stalemate and proposed that the subject of the rate of power supply to the Korba Aluminium Plant should be considered at an informal meeting of the Council of Ministers at the end of May 1967. As there was no likelihood of the Electricity Board agreeing to supply the first block of 75MW of power at the rate of Rs. 180 per KW/Year, the Commerce and Industry Department suggested that the best solution of the problem was that the MP Electricity Board might be asked to charge a rate of Rs. 180 per KW/Year for the first 75 MW of power and that a subvention might be given to the Board representing the difference between Rs. 286 and Rs. 180 for 75 MW. The amount of this subvention was expected to be Rs. 80 lakhs a year. The Commerce and Industry Department's view was that if the Government failed to stand by its earlier commitment for supply of 75 MW of power at Rs. 180 per KW /Year, there was a danger of the aluminium plant being postponed for an inordinately long time or even of its being dropped. It was also felt that the direct gains from

taxes and royalties would more than compensate the State Exchequer for the subvention to be paid to the Electricity Board. The officers concerned thought, on the basis of the available information, that such gains would be nearly two and a half crores.

The Council of Ministers, at their informal meeting, appreciated this point of view and approved the proposals of the Commerce and Industry Department that negotiations with the Bharat Aluminium Company regarding the power rate should be conducted on the following lines :

(*a*) The State Government would stand by its commitment to supply the first block of 75 MW at the rate of Rs. 180 per KW/Year.

(*b*) For the remaining block of 185 MW, the rate would be Rs. 286 per KW/Year or the rate which is finally determined as correct by the experts of the MP Electricity Board and the Bharat Aluminium Company on the basis of the calculations furnished by the MP Electricity Board. This rate would continue to be charged until electricity could be made available from any of the hydel projects taken up as a part of the Narbada Valley Scheme.

(*c*) From the date that power would be made available from a hydel project under the Narbada Valley Scheme, the rate to be charged in respect of this block of 185 MWs would be Rs. 225 per KW/Year.

(*d*) The power supplied would be exempt from levy of electricity duty.

(*e*) A long term agreement on these lines may be entered into by the Electricity Board and the Company, subject to the inclusion of a clause for a rise in the rates of power on account of increase in the cost of coal.

A meeting between the officers of the MP Government, MP Electricity Board and the Bharat Aluminium Company was held at Bhopal in September 1967. At this meeting, the representatives of the Bharat Aluminium Company again repeated the earlier demand made by the Union Department of Mines and Metals in December 1966, regarding the supply of the first block of 75 MW of power at Rs. 180 and the remaining block of 185 MW at Rs. 260 for a period of three years after the start

of production by the Plant and at Rs. 200 thereafter. They maintained that if the State Government's suggestion regarding the adoption of the higher rate of Rs. 286 for 185 MW till the availability of power from a hydel project was accepted, the economics of the plant for its entire life would have to be calculated on the basis of the higher rate. This, according to them, would make the Project uneconomical. In that case, the Union Government might decide either to shift the smelter to a place where hydel power at a cheaper rate was available or completely abandon it.

Regarding the discrepancy between the rate of Rs. 286 per KW/Year calculated by the MP Electricity Board and Rs. 260 calculated by the Bharat Aluminium Company, it emerged that the difference was mostly due to the different basis for calculation of interest on depreciation fund adopted. The MP Electricity Board had taken into account interest charges payable on the initial block of capital, but it was contended on behalf of the Bharat Aluminium Company that, since the depreciation on the fixed assets was being separately charged, interest charges should only relate to the average capital at charge, *i.e.*, the depreciated capital at half the life of the power plant. The representatives of the Bharat Aluminium Company, in support of their argument stated that their calculations were made on the basis adopted by the Central Water and Power Commission and urged that this basis should be adopted by the MP Electricity Board. The representative of the MP Electricity Board, on the other hand, stated that the basis suggested by the Bharat Aluminium Company was not in conformity with the practice followed by them, while calculating power rates in the past.

It was agreed at the meeting that the representatives of the State Government would obtain Government's orders on the views expressed by the representatives of the Bharat Aluminium Company and communicate a firm offer to the Union Department of Mines and Metals shortly.

During these discussions the State Government officers gained a firm impression that the location of the aluminium plant at Korba would be in jeopardy, if the State Government were to persist in its contention that the rate for the hydel power would be made available to the plant only after the commissioning of a hydel project. The Bharat Aluminium Company wanted

a definite date from which it would start paying the lower rate for power for the balance of 185 MW. Without an indication of a firm date, the Company would prepare the case for the aluminium project at Korba on the basis of higher power rates throughout its operating life. This would affect the economics so adversely as to raise a question of the location itself. And the State Government officers could not ignore the fact that abundant power at a cheap rate was available from the Sharawati hydel project in Mysore. There were indications that this rate might even be Rs. 150 per KW/Year. The possibility of the aluminium plant being shifted to Sharawati could not be ruled out.

Sanction for the setting up of an alumina plant at Korba had already been issued by the Union Government in October 1967. There could, therefore, be no doubt about the alumina plant. The point for consideration for the Madhya Pradesh Government was the effect on the economics of an aluminium plant in case the alumina produced at Korba was transported to Sharawati for the manufacture of aluminium with cheaper power. It was calculated that for the production of each tonne of aluminium, two tonnes of alumina would be required to be transported. Comparing the cost of transportation of alumina with the savings likely to be effected in the manufacture of aluminium by utilising cheaper power, it was felt that so long as there was a margin of less than Rs. 95 per KW/Year between the cost of power at Sharawati and that at Korba, there was no danger of the shifting of this plant elsewhere. As it was, the margin between the rate for thermal power at Korba and the possible rate of hydel power at Sharawati was nearly Rs. 136 per KW/Year. It was also known that the Koyna Aluminium Project to be set up by Bharat Aluminium Company in Maharashtra had been offered a rate of Rs. 205 per KW/Year, which was considered satisfactory by the Company.

In the Commerce and Industry Department of the State Government, it was appreciated that from the point of view of the Bharat Aluminium Company, it was justifiably contended that other smelters in the country had already secured considerably lower rates of power from their respective suppliers. The cost of power being the major component of the cost of production, the difference between the rates available to those

producers and the rates offered by the State Government to the Bharat Aluminium Company would materially reduce their capacity to compete with other producers. It was also appreciated that Bharat Aluminium Company could accept the higher rate only for a short period, provided they could be firmly assured of the supply of power at a substantially cheaper rate for the remaining period of the agreement. Since the higher rate would involve a lower margin of profit for the Bharat Aluminium Company, the exact period, for which this higher rate would be applicable, would have to be stated. Similarly, there would have to be no ambiguity about the lower rate offered for the subsequent period. This would enable the Bharat Aluminium Company to assess the viability and profitability of the project, without which no investment decision would be possible. At the same time, the Madhya Pradesh Government officers felt that 250 MWs of power, even at other potential sites, would not be available from within the existing capacities of existing power plants; fresh capacity would have to be established and the rate of power would be much higher than the rates at which existing aluminium plants were getting power. As a matter of fact, the State Government officers were aware of the arrangements made by a private aluminium company for obtaining power, for the expansion of their existing aluminium unit, at a rate higher than the rates of hydel power which the MP State Government was prepared to offer.

The State Government was hesitant to offer the lower rate of Rs. 225 from a specified date as it was not sure when any of its hydel projects would be sanctioned, implemented and commissioned. There were three distinct possible hydro-electric sources in the State, any one of which could provide power at a substantially cheaper rate. These schemes were :

(1) Punasa (Narbada Sagar) Hydro-Electric Power Project.
(2) Demba Project on river Son.
(3) Indravati Basin Scheme

None of these schemes was ready for implementation, but the State Government was pressing the Union Government for the early clearance[6] of at least two of these schemes. As

[6]Involved technical clearance by the CWPC as well as sanction for inclusion in the Fourth Plan.

the Bharat Aluminium Company wanted the rate of power to be made effective from a definite date, it was felt in the State Commerce and Industry Department that a calculated risk had to be taken. Since the smelter was expected to go into production in 1971-72, the view was taken that in case the Bharat Aluminium Company agreed to accept the higher rate of power for a period of 5 years instead of 3 years already offered by them, a margin of nearly 10 years would be available to the State Government for the completion of one of the proposed hydel projects. On this basis, the Commerce and Industry Department proposed that the following offer might be made to the Bharat Aluminium Company :—

(*i*) The first 75 MW of power be supplied at the rate of Rs. 180 per KW/Year.

(*ii*) The balance block of 185 MW of power be supplied at a rate of Rs. 285 per KW/Year for a period of 5 years from the commencement of the production of the smelter.

(*iii*) For the remaining period of the agreement, the block of 185 MW of power would be supplied at a rate of Rs. 225 per KW/Year.

(*iv*) No electricity duty would be charged on the supply of power to the Bharat Aluminium Company.

It was calculated that the supply of 185 MW of power at Rs. 225 per KW/Year and 75 MW at Rs. 180 per KW/Year would give an average rate of Rs. 212/- per KW/Year for the entire 260 MW of power required by the Bharat Aluminium Company. This figure, it was felt, compared reasonably with the rate of Rs. 205 offered by the Maharashtra Government for the proposed Koyna Aluminium Plant which was to get hydel power. It was considered that with the increase in the prices of aluminium and with the possibility of the new and expanded plants, getting their additional requirements of power at rates higher than those at which power was supplied to them in the past, the Bharat Aluminium Company would find the proposed rates economical.

The financial implications of the proposal were :

(*a*) The State Government would provide the MP Electricity Board a grant-in-aid to compensate it for the loss

it would suffer in supplying the first block of 75 MW of power at Rs. 180 per KW/Year. Initially this would be approximately Rs. 80 lakhs per annum.

(*b*) Subsequently on the availability of power from a hydroelectric scheme, the rate of supply as indicated by the Board would be Rs. 225 per KW/Year. At this stage, the compensation to be paid annually to the MP Electricity Board for the first 75 MW of power would be reduced to Rs. 34 lakhs.

(*c*) In case a hydel scheme could not be commissioned within a period of 5 years after the start of production in the smelter, thermal power would have to be supplied at the lower rate proposed. In such a case, the MP Electricity Board would have to be compensated for the supply of the balance block of power of 185 MW at the lower rate of Rs. 225 resulting in payment by the State Government to the Board of an additional annual grant-in-aid of Rs. 1·14 crores. This contingency would prevail, if at all, for a short period and represented a risk, well worth taking to secure the implementation of the aluminium project as also the connected hydel scheme.

(*d*) In regard to the grant of exemption from electricity duty, the Commerce and Industry Department felt that the revenue of Rs. 2.27 crores per annum which the State Government would forego on this account should not be considered as a real loss. The imposition of a duty of one paisa per unit would be equivalent to an increase of Rs. 90 per KW/Year in power cost and it would be impossible for the project to bear this burden. The location of the aluminium project in Madhya Pradesh was likely to assist the State in obtaining sanction and assistance for the execution of an additional hydel scheme and it would, therefore, be in the larger interests of the State to grant the exemption from electricity duty.

The Electricity Department of the State Government agreed with the views of the Commerce & Industry Department. But before the case could be sent to the Finance Department, a meeting was held in October 1967 between the representatives

of the Union Government, the State Government, the MP Electricity Board and the Bharat Aluminium Company at Delhi under the chairmanship of the Secretary, Union Department of Mines and Metals. At this meeting, the following phasing of power requirements by the Bharat Aluminium Company was indicated :

1971–72	...	65 MW
1972–73	...	165 MW
1973–74	...	265 MW

The stand taken by the Bharat Aluminium Company and the Union Government earlier, regarding the rates of power was reiterated. It was, however, pointed out by the representatives of the State Government that early sanction of a hydel project in the State, which might make hydel power available in 8 to 10 years, would enable the State Government to supply power to the Bharat Aluminium Company at a favourable rate according to the time-schedule, without the State having to pay any subsidy on account of 185 MW to the MP Electricity Board. It was stated by the State representatives that supply of power to the Bharat Aluminium Company at the rate proposed by the Union Government would involve payment by the State Government of an annual subsidy of nearly Rs. 2 crores, which could be avoided if a hydel project was sanctioned at an early date. On behalf of the Bharat Aluminium Company, it was emphasized that they would require a firm commitment from the State Government regarding the rate of the supply of power after the initial period of three years, without the rate being contingent upon the availability of power from a hydel project.

The date from which power at the lower rate of Rs. 200 per KW/Year (Rs. 225 according to the MP Electricity Board and the State Government) should be available to the Bharat Aluminium Company was further discussed at the meeting. The phasing of power requirements indicated that the Bharat Aluminium Company would require 165 MW in 1972-73. It was suggested that the period of three years for which the Bharat Aluminium Company was agreeable to obtain power at the higher rate of Rs. 260 per KW/Year (Rs. 286 according to the MP Electricity Board) might count from the year

when it would consume more than 150 MW of power and that the long term power rate should be operative after three years, following the year in which the total consumption of power exceeded 150 MW.

The Commerce & Industry Department of the State Government, which re-examined the question with reference to the discussions in the meeting at Delhi felt that on account of the arrangements now proposed, there was no difference in regard to the timing by which hydel project was to be commissioned. It was, therefore, proposed that this change might be accepted.

The Electricity and Finance Departments of the State Government agreed to these revised proposals. A precis containing these proposals was approved by the Chief Minister and circulated for orders of the Council of Ministers.

Meanwhile, the Managing Director of the Bharat Aluminium Company came to Bhopal in March 1968 and had a meeting with the Chief Minister and the Minister for Industries and the officers concerned. The Managing Director was assisted by the Financial Adviser of the Company. He was apprised of the thinking of the State Government on the subject. While the Managing Director had no comments to make on the long term rate of Rs. 225 which the State Government proposed to offer, and did not press the earlier demand made on behalf of the Company for fixing this rate at Rs. 200, he was keen that the rate of thermal power beyond the initial block of 75 MW should be Rs. 260 and not Rs. 286. The requirements of power were intimated by him as 265 MW and he wanted the rate of Rs. 260/- per KW/Year for 190 MW for the interim period. The Financial Adviser of the Bharat Aluminium Company said that the interim higher rate of tariff should be worked out in accordance with the formula of the Central Water and Power Commission, *i.e.* the interest on capital block should be calculated on the depreciated value of the block at half the life of the utility and not on the initial block itself as had been done by the State Government. According to him "the reason for making interest calculations on depreciated capital block was that full depreciation had otherwise been provided for in the calculations and since this money would be available in the depreciation fund, it would continue to earn interest, for which credit

should be taken in the calculations. The usual method for taking this credit was that, instead of making involved calculations of the interest accruing to the depreciation fund, interest was calculated on the depreciated capital block based on half the life of the utility". It was agreed on behalf of the State Government that this matter would be further examined in consultation with the MP Electricity Board.

The Managing Director also stated that there was no justification for the period of three years during which the higher tariff was to prevail, being counted from the year following the year in which the consumption exceeded 150 MW. He said that "besides there being no rationale in fixing the figure of 150 MW, the point of tmie when the plant would consume 150 MW was uncertain, being dependent upon when the smelter comes into existence." He contended that "the more logical and acceptable variant would be to count the period of three years from the start of alumina plant or aluminium plant, whichever was earlier. If the period for which the increased rate of tariff was, therefore, a fixed one, it would be possible for the Company to assess its liabilities reasonably accurately and work out the economics of the Project." On behalf of the State Government, it was pointed out that the basis had been adopted as a result of the suggestion made at a meeting between the representatives of the State Government and the representatives of the Union Government, held in the Department of Mines and Metals in October 1967.

Even after the meeting with the Chief Minister, the Managing Director, Bharat Aluminium Company continued to press his point that there would be a greater measure of certainty, if the period of three years was fixed with reference to the commencement of the production by the smelter rather than the consumption of power exceeding 150 MW in a particular year. He stated that the smelter was expected to start production in April 1973 and, therefore, the State Government would, in any case, be able to charge the higher rate till 1976.

The M.P. Electricity Board was requested by the Commerce & Industry Department to consider the point made by the Financial Adviser of the Bharat Aluminium Company, regarding the calculations of the rate for thermal power for the interim period. A meeting of the Board of Directors of the MP Electricity Board was specially held to decide this question. The

Board felt that the power rate of Rs. 286 per KW/Year was worked out by the Board in March 1966, when a fixed capital cost of Rs. 1000 per installed KW was assumed. Because of the devaluation of the rupee, the closure of the Suez Canal and other factors beyond the control of the Board , the assumption regarding the capital cost was no longer valid and a re-examination of the earlier power rate quoted by the Board was necessary. If this was done , it could not be restricted to an individual item of cost; one would have to take into account the changes in the capital cost and other relevant factors. Even if the basis of the interest calculations suggested by the Bharat Aluminium Company was considered more logical, the advantage that the Bharat Aluminium Company might have would be about Rs. 10 to 15 per KW/Year ; on the other hand , if the capital cost per installed KW were taken to be Rs. 1200 instead of Rs. 1000 adopted in earlier calculations , this advantage would be more than neutralised. Thus a comprehensive review of the rates earlier quoted was not likely to benefit the Bharat Aluminium Company. The Board insisted on charging the rate of Rs. 286 per KW/Year for the thermal power to be supplied to the aluminium plant.

The views of the Electricity Board were communicated to the State Government. The Commerce and Industry Department agreed with the MP Electricity Board and did not feel the need for any change in the earlier rate of Rs. 286 per KW/Year for thermal power quoted by the State Government. The acceptance of the contention of the Bharat Aluminium Company would have meant a loss of Rs. 47 lakhs per annum to the State Government for a period of three years and the Commerce and Industry Department felt that this loss might well be avoided for the reasons given by the MP Electricity Board. The views of the Commerce and Industry Department were approved by the Chief Minister and no change on account of this item was considered necessary in the precis already circulated.

As to the point made by the Managing Director for reconsideration of the basis on which the interim period for the power supply at a higher thermal rate had been fixed, the matter was again examined by the Commerce and Industry Department in consultation with the Electricity and Finance Departments. The main consideration for the State Government to have a

sufficiently long interim period for the higher rate of power was their estimation of the time likely to be taken in commissioning a hydroelectric project of adequate capacity. It had been estimated that by the end of the year 1975–76 at least one hydroelectric power project would start generating power. But since the smelter was to commence production, according to earlier estimates, in 1971–72, the State Government wanted a longer interim period, during which power would be supplied at the the higher thermal rate. In view of the revised production programme of the Bharat Aluminium Company, the departments concerned of the State Government felt that they could ensure their principal object of having a long interim period by agreeing to the suggestion of the Managing Director of the Bharat Aluminium Company, with the stipulation that the higher rate of power would prevail till March 31, 1976, even if the smelter commenced production before March 31, 1973. At the same time, as a measure of equity, it was proposed that the State Government might agree to provide power earlier at the lower rate of hydel power in the event of a hydroelectric station of sufficient capacity being commissioned before the completion of the interim period of three years. These arrangements were agreed to by the departments concerned. A supplementary precis, including these changes and covering other relevant points,was prepared by Commerce and Industry Department and circulated after the Chief Minister's approval for orders of the Council of Ministers.

The Council of Ministers considered the question at a meeting on April 17, 1968 and approved the following proposals :

"(*a*) The first block of 75 MW will be supplied at the rate of Rs. 180 per KW/Year.

(*b*) In the initial period, the balance requirement of power by the Bharat Aluminium Company will be supplied at the rate of Rs. 286 per KW/Year . This rate of supply will prevail upto a period of three years from the date of commencement of commercial production by the aluminium smelter.

Provided that, if the commercial production is commenced before March, 31, 1973, this rate of power supply shall continue to prevail till March 31, 1976 ;

Further provided that if at any date, before March 31, 1976 hydroelectric power becomes available to the State Electricity grid by the construction of a suitable new hydroelectric project of adequate capacity, the rate of supply for the balance requirements of power shall be reduced to Rs. 225 per KW/Year from the date such hydroelectric station commences production of the quantum of power required by Bharat Aluminium Company.

(*c*) For the remaining period of the agreement, a rate of Rs. 225 per KW/Year will be charged for the balance block of power governed by the special tariff now being offered.

(*d*) The power supplied to Bharat Aluminium Company for this project under this special tariff shall be exempt from the levy of electricity duty or any other kind of charge by way of tax or duty by the State Government for the period of the agreement.

(*e*) A long-term agreement of 30 years will be entered into between Bharat Aluminium Company and the MP Electricity Board. This agreement will provide firm rates as stated above, subject to the inclusion of a clause for a built-in rise in the rates of power on account of increase in the cost of coal and on account of any increase, necessitated by the compulsory enforcement of war time risk insurance by the Government of India.

(*f*) The power supply at this special tariff will be restricted to the requirements of the integrated Alumina/Aluminium and Fabrication Plants and will be made available at a single point of supply.

(*g*) The power supply to the Phutka Pahar Mines[7] will be made available only at the normal HT industrial tariff.

(*h*) Power supply for domestic consumption in the residential colonies of Bharat Aluminium Company will be at the HT general purpose tariff, subject to certain

[7]Bauxite mines to be worked by the Company.

restrictions regarding supply to non-employees of the Company.

(*i*) The Bharat Aluminium Company shall have to maintain a minimum power factor of 0.85 in respect of the 265 MW of power which shall be supplied at the special tariff proposed. They will not, however, be entitled to any rebate for the maintenance of power factor of greater than 0.85.

(*j*) These rates for power supply will be subject to the stipulation of 90 per cent load factor and the rates will hold good upto this load factor. Any units consumed in excess of units corresponding to 90 per cent load factor will be charged at paise 1.729 per unit, subject further, in all cases, to any adjustments necessitated by the change in price of coal.

(*k*) Any appropriate tariff minimum charge based on the agreed contract demand will also be embodied in the agreement to be entered into by the Bharat Aluminium Company with the MP Electricity Board."

The Council of Ministers also decided that as a result of the decisions taken regarding the rate of supply of power to the Bharat Aluminium Company, an undertaking should be given to the MP Electricity Board regarding the subvention to be given to it on the following basis :

"(*a*) Before power can be made available to the Aluminium Plant from a hydel source, an annual subsidy may be paid to the MP Electricity Board representing the difference between Rs. 286 and Rs. 180 per KW/Year for the first block of 75 MW of power. The annual quantum of this grant-in-aid would approximately be Rs. 80 lakhs.

(*b*) In the subsequent period, when power can be provided from a hydroelectric scheme the amount of this subsidy would represent the difference between Rs. 225 and Rs. 180 per KW/Year for 75 MW. This subsidy would then be reduced to Rs. 34 lakhs per annum.

(*c*) As to the balance of 190 MW of power, no subsidy would be paid to the Board till March 31, 1976 or the expiry of a period of three years from the date of commencement of commercial production in the

aluminium plant, whichever is later. In the event of a hydel project not being commissioned by that time, the Board will be paid an annual subsidy representing the difference between Rs. 286 and Rs. 225 per KW/Year. The quantum of this subsidy is expected to be Rs. 1.14 crores per annum in addition to the subsidy of Rs. 80 lakhs for the first block of 75 MW of power. This subsidy will continue to be paid to the Board till hydel power from a source of adequate capacity is made available in the State."

The decisions of the State Government were communicated to the Bharat Aluminium Company, the Union Government and the MP Electricity Board.

Throughout their negotiations with the Union Government and the Bharat Aluminium Company, the State Government were very keen that their offer regarding the rates of power should not be such as might be considered uneconomical for the aluminium plant. This might lead to the plant being delayed, abandoned or shifted to a place outside the State. At the same time, the State Government was keen to reduce to the minimum the quantum of financial liability that they were to take on themselves as a result of the offer of a lower rate of power. In their desire to find a solution likely to be acceptable to the Bharat Aluminium Company and least burdensome for the State, the representatives of the State Government maintained continual contacts with the officers of the Union Government and the Bharat Aluminium Company and the formal and informal discussions amongst them went a long way in shaping the final decision.

The final decision involved considerable sacrifice on the part of the State Government, but the latter thought this sacrifice had to be made to secure the location in the State of a plant with a capital investment of more than 100 crore rupees and an employment potential of about 6000. The State Government hoped that the financial burden would be offset by the additional income likely to accrue in the form of royalty on bauxite and coal, and sales tax on aluminium products and the State Government's share in the excise duty on aluminium and its products.

In addition, the State Government could expect other benefits like the employment of a large number of persons in the Project and the growth of subsidiary industries in the area. If this materialised, the sacrifice would not have been made in vain.

GLOSSARY

1. Watt — This is the basic unit by which electric power is measured.
2. 1 Kilo Watt (KW) = 1,000 Watts.
3. 1 Mega Watt (MW) = 1,000 Kilo Watts.
4. 1 Kilo Watt/hour (KWH) —This is the commonly known Electric Unit by which electric energy consumption is measured and represents the consumption of electricity at a power of one Kilo Watt continuously for one hour.
5. 1 Kilo Watt/year —This represents the energy consumed for one continuous year when power is supplied at one Kilo Watt continuously. This is a more convenient unit while contracting for electric energy in large bulk. It will be obvious that this unit is 24×365 times 1 K.W.H. *i.e.* the normal unit used for domestic supply purposes.
6. Load Factor —This is defined as percentage ratio of the average load to the maximum load for any given period for electric installation. To give a simple example, if a single electric bulb of say 50 Watts is treated as an individual electric installation and the bulb is in use for a period of 8 hours out of any given 24 hours period, the load factor of this installation will be 33 per cent since the maximum amount of electric energy which it would consume, would be 50×24 units while the average energy consumed will be 50×8 units. It will be clear that where a factory works continuously at full load (such as an Aluminium Plant), it will have a very high load factor. From the point of view of the electric supply

a consumer with a high load factor is preferable since he consumes much more electrical energy within a given period than the consumer with a low load factor, and therefore, Electric Supply Undertakings prescribe a minimum load factor for bulk consumers.

7. Power Factor —It is very difficult to adequately explain this term without some knowledge of the basic principles of electricity, particularly of Alternating Current. Briefly, however, it may be explained that a faulty electrical installation can lead to a lowering of the power factor which in effect leads to a wasteful use of the energy employed in electric power generation. Therefore Electricity Supply Undertakings, particularly for bulk consumers, insist on the consumers maintaining a certain minimum power factor. The ideal power factor is one (unity), but normally the bulk consumer can be expected to maintain a power factor of 0.85. A lower power factor than that is considered to be too wasteful.

INDIAN VEGETABLE OILS LIMITED

A. D. MODDIE

Shri S. N. Seth, General Manager of *Indian Vegetable Oils Limited* (IVOL), was trying to develop a rational strategy for the company's line of vanaspati and processed oils for 1965. In December, 1964, he was reviewing what had proved to be a very difficult year as a result of somewhat unexpected restrictive actions of two governments, the Central Government and the Government of Gujarat.

Vegetable oils have been popular for cooking purposes in India for many years. Because of its universal use, vegetable oil products are always considered essential articles like grains and sugar, and Government is concerned about their availability and prices.

In India, by far the largest source of vegetable oil has been groundnut oil. In addition, there have been smaller quantities of sesame, rape/mustard and cotton seed. The figures for the previous five years are given in Table 1.

The vegetable oil processing industry has been a varied one. Many small units used to press oil from local seeds for local production. Only a few companies made any attempt at national distribution. IVOL has always been one of the largest firms in the industry.

At the beginning of 1964, IVOL had plans for conducting its business along similar lines as had obtained in the past, which called for a total processing of about 80,000 tonnes of vegetable oil, mostly using groundnut as raw material. It planned to export 15,000 tonnes of processed vegetable oils and 40,000 tonnes of raw vegetable oils.

Exporting vegetable oil products was not inherently profitable for IVOL, since world prices were well below those obtaining in India. Government had encouraged all possible exports, however, as a means of improving the foreign exchange position of the country as a whole, and specifically for the import of essential raw materials. Among the encouragements extended to the vegetable oil industry was the right to import cheaper

TABLE 1

(in '000 metric tons)

Year	Groundnut Oil	Castor Oil	Sesame Oil	Rape & Mustard Oil	Linseed Oil	Cotton seed oil	Total Oil
1958–59	1187	39	160	317	134	—	1837
1959–60	896	38	114	323	129	—	1500
1960–61	999	32	91	420	116	—	1658
1961–62	1072	35	110	403	117	30	1767
1962–63	1040	36	143	386	129	60	1794

palm and copra and some chemicals upto 70—80 per cent of the FOB value of exports. The difference in price between these entitlement imports and internal prices off-set the loss in exports. The main advantage of these imports was that they provided essential raw materials for the company's soaps and vanaspati production. These were either totally or partially unobtainable in the country.

IVOL's and India's exports of vegetable oil products from 1961 to 1963 were as follows :

TABLE 2

	Export value lakhs of rupees		
	1961	1962	1963
Indian Vegetable Oil Limited	71	201	516
India	2378	3470	4413

Import raw material requirements of IVOL in 1965 were likely to be about Rs. 260 lakhs.

During the early part of July 1964, attention was increasingly being drawn by newspaper articles to Government expressions of concern over rising prices of groundnut oil. Below are given prices from January 1964, and a comparison with prices of the previous years.

TABLE 3

	Price per metric tonne	
	1963	1964
	Rs.	Rs.
March Quarter	1680	1968
June Quarter	1823	2218
Sept. Quarter	1912	2665
Dec. Quarter	1875	2528

This phenomenon had also come to the notice of the trade. On July 4, 1964 *The Economic Times* published a report by a Staff Reporter which stated that the Bombay Oils and Oilseeds Exchange Limited and Indian Oil Products Export Association had decided to hold a joint meeting and then approach the Central Government with suggestions to check the rising prices of oils and oilseeds. This report concluded with the remark :

"As the export of groundnut oil and oilcake meals is the main cause for the unprecedented rise, some steps suggesting a judicious export of these commodities may be discussed. The report of the joint meeting will be submitted to the Centre".

This meeting failed to reach any agreement, and *The Economic Times* of the following day reported the divergent views of the two associations.

The President of the Bombay Oil-seeds Association stressed the need to ban the export of edible oils, whereas the President of the Indian Oil Products Export Association supported exports in view of India's need for foreign exchange. These associations met again on July 6, and *The Economic Times* of July 7, 1964 reported that the meeting had emphasised the need to ban the exports of groundnut oil immediately.

Government's views on exports were not clear at that time, and, in the absence of a policy statement, there was no indication that Government supported the idea of a ban. On the contrary, *The Economic Times* of July 9, in a report on the rising prices of groundnut oil in Gujarat, stated that the Union Government, through the Commerce Minister, had "asserted that exports were little and were not responsible for the price increase. The Centre is also reported to have assured that further exports were unlikely for quite some time to come." The Minister is reported to have said this to the Chief Minister of Gujarat when the latter was contemplating a ban on the movement of groundnut oil and seed from Gujarat. But on the same day a report from *The Economic Times*' Delhi bureau, reviewing the overall price increases in the country, stated that the increases in groundnut oil and groundnut seed prices were attributed to the increased exports of groundnut oil in 1963 and 1964.

Shri Seth believed that three other major factors were in fact more responsible for the price rises, namely :

(*i*) The failure of the mustard crop, and lower production of other oilseeds;

(*ii*) The general increase in price of all commodities especially foodgrains;

(*iii*) A certain amount of speculation and hoarding by traders.

The oils and seeds markets weakened on July 9, 1964 mainly due to the Reserve Bank margin curbs on bank advances against oilseeds and oils (*e.g.* Bombay groundnut oil and groundnut seed prices dropped by Rs. 7 and Rs. 10 per ton respectively).

On July 11, Government of India imposed a ban on the export of edible oils and products. A notification to this effect appeared in the papers on July 11, and came into immediate effect.

As it happened, the export ban had no effect whatsoever on oils and seed prices. *The Economic Times* of July 12 reported that the export ban "has had no effect on the market". On July 14, the same paper reported further firming up of groundnut oil, groundnut seed, castor oil and castor seed prices. The next day, a further spurt in all oils and seeds, all over the country, was reported. Under *Commodity Notes*, the paper stated that "the failure of the two-pronged attack (*i.e.* curbs on bank advances and ban on exports) to check the price is attributed mainly to sustained shortage of supplies." It then turned its attention to exports, giving the following figures of exports in 1964.

TABLE 4

GROUNDNUT OIL EXPORTS IN TONNES

Shipped to date		70,000
Being shipped		8,000
Outstandings to be fulfilled		15,000
	Total	93,000

Shri Seth had information from his own export department which indicated that the figures should have been 61,000 tonnes shipped to date and 4,000 tonnes outstanding or being shipped. It could not be determined, of course, to what extent the apparently erroneous reported figures were influencing Government of India actions, but Shri Seth felt that the effect was truly harmful.

The export ban naturally created confusion among exporters and this was accentuated by the fact that it was not known whether outstanding commitments would be allowed to be fulfilled or not. The Export Department

telexed the Delhi Office for clarification on July 13. A reply came on July 15, asking for details of commitments which were required by the Joint Chief Controller of Imports and Exports. This message also mentioned that the Joint Chief Controller wanted the Company's co-operation in implementing the export ban. And so the hazy situation continued with overseas buyers and IVOL exchanging dozens of cables. On July 16, the Exports Manager telexed from Delhi that the Government had taken an irrevocable decision to ban all exports including outstanding commitments. On that day, IVOL export commitments stood at, Refined G.N.O., 1,280 tonnes ; Hardened G.N.O., 400 tonnes ; Vanaspati, 200 tonnes ; Total, 1,880 Tonnes : c.i.f. value Rs. 31,13,000.

Among the cables received by IVOL from foreign customers, the following two carried typical messages :

(*i*) "Owing to rumours over here please cable whether old contracts maintained. Stop if cancelled we fear such decision very prejudicial to Indian foreign trade when conditions normal again." (from Paris).

(*ii*) "Request you advise appropriate authorities immediately that unless goods prepared to our specifications are shipped promptly we will be forced to proceed against you for variation caused by re-buying on higher markets plus considerable damages occasioned by inability to supply local contracts including Government orders stop in even complete repudiation all buyers will in future insist India omitted from contracts owing instability and lack responsible authority." (From Sydney).

The Gujarat Government imposed a ban on the export of groundnut oil and seed on the July 21, 1964, eleven days after the Government of India's ban on overseas exports of vegetable oils. The Gujarat ban was not wholly unexpected as in the case of the ban on overseas exports as prices had been rising steadily in that State and there was a considerable amount of popular agitation against high prices of oil and foodgrains. Gujarat Government feared that too much oil was going out of the State, resulting in higher prices locally. They also feared the possible shortage towards the end of the crop season between August and November. This was partially true, but it was the trade's view

that Gujarat had enough seed and oil to meet the State's requirements of approximately 8,000 tonnes a month and it was estimated that the State's stocks were about 40,000 tonnes, leaving an exportable surplus of 10,000 tonnes for the remaining three months of the crop year. The figures for the surplus appeared to be as follows :

TABLE 5

(lakh tons)

	1962/63	1963/64	1964/65
Production as oil	2.91	3.50	4.31
Less 20% for next seasons' seeds	.58	.70	.86
	2.33	2.80	3.45
Less State's consumption needs at 10,000 tonnes a month	1.20	1.20	1.20
Balance available for movement outside the State	1.13	1.60	2.25

The Gujarat ban served as a ban on the movement of groundnut oil, the major oil, from the major surplus area in India, and, as a result, had caused scarcity and high prices in the rest of India. Prices in Gujarat and outside Gujarat in the following months are given below :

TABLE 6

(Rupees per ton)

		Inside Gujarat	Outside Gujarat (Bombay)
1964	June—Average	2,155	2,316
	July—Pre-ban	2,311	2,492
	July—Post-ban	1,999	2,567
	August	1,710	2,550
	September	1,818	2,920
	October	1,800	2,614

Mr. Seth thought that the main factor that seemed to have influenced Gujarat Government's decision was that it was deficit in foodgrains, and it felt that it should control its own surpluses if the zonal system operating with foodgrains and other States was detrimental to Gujarat's interests.

Frequent representations were made to the Gujarat Government to lift its ban and allow the movement of the new surplus crop from early November, after taking whatever steps it thought fit to provide for its own internal needs. On November 11, Gujarat Government lifted the ban on the movement of oils, but not of seed. The resultant effects on prices both inside Gujarat and outside Gujarat were as follows :

TABLE 7

PRICE OF GNO (RS. PER TON)

Period	Inside Gujarat	Outside Gujarat
1964 November-first half (Pre-ban)	1,775	2,321
November—Second half (Post-ban)	1,985	2,258
December—Average	2,066	2,348
1965—January—Ist week	2,135	2,263
2nd week	2,040	2,140
3rd week	1,970	2,093
4th week	1,900	1,991

The Groundnut Crop of 1964-65 yielded 40 lakh tons of seed.

TABLE 8

AVAILABILITY OF OILS AND FATS (LAKHS OF TONS)

November	1963/64	1964/65
Groundnut oil	10.74*	12.25
Rape/Mustard Oil	1.89	3.89
Sesame Oil	1.17	1.32
Cottonseed Oil	0.60	0.60
Soya Oil (PL-480 imports)	—	0.75 (likely to arrive from February, 65)
Tallow (PL-480 imports)	—	0.50 (likely to arrive April/ May 1965)
	14.40	19.31

There were no imports of soyabean oil or tallow in 1963/64.

*Exports of 74,000 tonnes of Groundnut oil and 45,000 tounes of seed (HPS) have been accounted for in arriving at the GNO availability.

The first estimates of the next groundnut crop and the following year's availability of oils and fats were available to the Company in December 1964, and they are given in Table 8. These are compared with the availability of oils and fats in 1963-64.

Shri Seth believed he should develop his company's strategy for 1965 around various alternative courses of action. Among these were :

1. He could forego any thought of exporting in 1965;
2. or pursue a vigorous campaign to influence Govt. of India & Gujarat State Govt. against export bans in 1965;
3. or adopt a "wait-and-see" attitude.